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ABSTRACT

The first of three volumes included in a secondary agricultural supplies and services curriculum guide, this volume contains units of instruction in two major areas: (1) plant and soil science and (2) leadership (Future Farmers of America). Typical of the nineteen units included in the first section are the following: Plant Insect Control, Plant Deseases, Land Preparation, Agriculture Stabilization and Conservation Service, Land Judging, Marketing Crops, Establishing and Improving Tame Pastures, Agricultural Chemicals, Soil Conservation Practices, and Seed Selection. The eight units included in the leadership section include Orientation to Vocational Agriculture, Introduction to the Future Farmers of America (FFA), Duties and Responsibilities of FFA Members, Developing the FFA Program of Activities, Parliamentary Procedure and Public Speaking, Importance of Public Speaking, Developing and Delivering a Speech, and Becoming a Good Leader. Each unit follows a typical format which includes terminal objectives, specific objectives, suggested activities, instructional materials, references, information sheets, transparency masters, assignment sheets, tests, and tests answers. (LRA)

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AGRICULTURE

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VOLUME 1 OF 3

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TO THE EDUCATIONAL RESOURCES
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PLANT AND SOIL SCIENCE

1. Plant Insect Control
2. Plant and Soil Science
3. Plant Diseases
4. Soil Sampling
5. Land Preparation
6. Soil Conservation Service and Conservation Districts
7. Agriculture Stabilization and Conservation Service
8. Landscaping
9. Land Judging
10. Fertilizers
11. Marketing Crops
12. Crop Planting
13. Establishing and Improving Tame Pastures
14. Improving Native Rangeland
15. Agricultural Chemicals
16. Chemical Weed Control
17. Soil Conservation Practices
18. Seed Selection
19. Plant Growth and Reproduction

LEADERSHIP (FFA)

1. Orientation to Vocational Agriculture
2. Introduction to FFA
3. Duties and Responsibilities to FFA Members
4. Developing the FFA Program of Activities
5. Parliamentary Procedure and Public Speaking
6. Importance of Public Speaking
7. Developing and Delivering a Speech
8. Becoming a Good Leader

PLANT AND SOIL SCIENCE

PLANT INSECT CONTROL
UNIT VII

TERMINAL OBJECTIVES

After completion of this unit, the student should be able to recognize plant damage caused by insects and be able to develop a plan for controlling insects. He should be able to collect and identify common insects on his home farm. This knowledge will be evidenced by the scoring of eighty-five percent on a post test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match five terms associated with plant insects.
2. Name five factors used in controlling insects.
3. Classify insects according to the way they feed on plants.
4. Classify insects as either harmful or beneficial.
5. Recognize the importance of economics in relationship to plant insect control.
6. Label a drawing showing the life cycles of most insects of economic importance.
7. Classify insecticides as either stomach poisons, contact poisons, or fumigant poisons.
8. Distinguish between natural and artificial control of insects.
9. Recognize 2 types of plant damage and identify the insect or insects causing the damage.
10. Collect and identify five harmful insects telling method of control and crops they attack.
11. Construct a chart when given the name of the insect giving adult description, damage, and crops attacked.

PLANT INSECT CONTROL
UNIT VII

SUGGESTED ACTIVITIES

I. Instructor:
   A. Provide students with objective sheet.
   B. Provide students with information sheets.
   C. Make transparencies.
   D. Discuss terminal and specific objectives.
   E. Discuss information sheets.
   F. Conduct a field trip.
   G. Give test.
   H. Display and discuss "sample" insecticide containers.

II. Students:
   A. Read objective sheet.
   B. Study information sheets.
   C. Collect insects and complete assignment sheet.
   D. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:
   A. Objectives
   B. Information sheets
   C. Transparency masters
      1. TM 1 - Beneficial Insects
      2. TM 2 - Life Cycle of Insects
      3. TM 3 - Life Cycle of Insects
   D. Assignment sheet
      1. Assignment Sheet #1 - Collecting and Identifying Insects
   E. Test
   F. Answers to test

II. References:

A. Instructional Material for Vocational Agriculture II, Teaching Materials Center, Agricultural Education Department, Texas A & M University, College Station, Texas.

B. Crop Production, Harold D. Hughes, Edwin R. Henson, The Macmillan Company, New York, New York.

C. Insects in Kansas, XB-94, Cooperative Extension, KSU, Manhattan, Kansas 66506

D. "Insecticides", XC-376, Cooperative Extension, KSU, Manhattan, Kansas 66506

E. "Kansas Field Crops Insect Control Recommendations", XC-431, Cooperative Extension, Manhattan, Kansas 66506

F. "The Alfalfa Weevil", USDA Leaflet #368, Supt. of Documents, US Govt. Printing Office, Wash., D.C. 20402.

G. Bishop, Douglas D., Stephen R. Chapman, and Lark P. Carter Working in Plant Science., McGraw Hill, Inc., c. 1978.

PLANT INSECT CONTROL
UNIT VII

INFORMATION SHEET

I. Terms and definitions

   A. Insect - Any small, boneless animal whose body is divided into three sections and has six legs

   B. Insecticide - A chemical used to kill insects

   C. Life cycle - The stages in the life development of insects

   D. Pesticide - A poisonous chemical used to control pests

   E. Nymph - A young insect which looks much like a small adult insect

II. Factors used to control insects

   A. Tillage, pasturing, and planting

   B. Rotation and selection of crops

   C. Planting dates

   D. Destruction of trash

   E. Quarantine areas

   F. Biological control

   G. Poison baits

   H. Chemical control

III. Insect classification (According to plant feeding)

   A. Chewing - This group bites off, chews, and swallows plant parts

      1. Armyworms

      2. Grasshoppers

      3. Cutworms

      4. Weevils

      5. Flea beetles

      6. Southwestern corn borer

   B. Sucking - This group pierces the outer layer of the plant and feeds from the cells

      1. Aphids

      2. Mites

      3. Chinch bugs

      4. Hessian flies

5. Greenbugs

C. Internal feeding - Enters the plant and feeds from within

1. European corn borer

D. Subterranean - This group includes both chewing and sucking insects which enter the plant below the soil surface

1. Corn rootworm

IV. Insect classification (According to benefit or harm)

A. Beneficial insects (Transparency 1)

1. Ground beetle - Feeds on insects
2. Lady beetle - Feeds on aphids
3. Lacewing larva - Feeds on aphids

B. Harmful insects classified as to crop attacked

Crop Attacked	Insects	Adult Description	Larvae Description	Damage	Control*
Alfalfa	Alfalfa Weevil	Snout beetle, 3/16" long, brown to black with faint lighter markings	Caterpillar, 3/8" long, brown head, green body, white stripe down back	Adults and larvae feed on growing tips, leaves, and buds	Liquid foliage application
	Pea Aphid	3/16" long, light to deep green, red eyes	Nymph, look like small adult	Pierces leaves, stems, blossoms, and pods and sucks sap	Liquid foliage application
	Spotted Alfalfa Aphid	1/16" long, pale yellow, rows of black spots on their backs, females - wingless	Nymph, look like small wingless adult, brighter in color	Suck juice from leaves and stems	Liquid foliage application or planting time soil treatment
	Variegated Cutworm	Moth, dark fore wings, lighter hind wings	Caterpillar, 2" long, 4 or 5 white dots down back of dark body	Suck nectar from flowers	Surface treatment of soil or leaves
Corn	Corn Rootworm	1/4" long, pale or yellowish green	Soft-bodied, white larvae 1/2" long	Larvae feeds on roots, adults eat foliage and silk	Granular soil treatment at planting time
	European Corn Borer	Moth, buff colored with dark brown wavy bands on wings, 1" wing spread	Caterpillar, pink-grey with random spots	Chews leaves, then all parts of stalks and ears	Foliage application

*Because of variability in federal regulations regarding insecticides, use of insecticides is subject to change. Check with the latest copy of "Kansas Field Crop Insect Control Recommendations", Cooperative Extension Service, for the recommended insecticide use.

Crop Attacked	Insects	Adult Description	Larvae Description	Damage	Control
Corn (con't.)	Southwestern Corn Borer	Moth, white to smoky yellow, 1 1/4" wing spread	Yellowish caterpillar with dark spots, 1" long	Eats leaves, then bores into stalk	No recommended chemical control, early planting for early harvest
	Spider Mite	Varies according to species	Nymph, look like small adult	Infest leaves, suck sap	Liquid foliage application
	Western Bean Cutworm	Moth, dark, light bar across front of wing, bean shaped marks at tips of wings	Caterpillar, tan, dark shield behind head 1 1/2" long	Cuts plants off near ground	Liquid foliage application
Sorghum	Chinch Bug	Soft-bodied, black with white wings with spots on them, 1/5" long	Nymph, brick red wings reduced to small pads until adult stage is reached	Sucks juices from plants	Apply to the soil as they migrate from small grains to row crops
	Corn leaf Aphid	Greenish-blue with dark heads	Nymph, look like small adult	Suck plant juices, can transmit diseases	Chemicals generally not recommended, may use liquid foliage application

Crop Attacked	Insects	Adult Description	Larvae Description	Damage	Control
Wheat	Armyworm	Moth, brownish-gray, 1 1/2" wing spread	Caterpillar, greenish, 3 stripes on side, 1 1/2" long	Eats foliage, strips field	Foliage application
	Fall Armyworm	Moth, gray-, white-, or dull-colored, 1 1/4" wing spread	Caterpillar, green to black with inverted white "y" on head, 1 1/2" long	Eats foliage, often completely destroys crop	Soil surface plus foliage application
	Army Cutworm	Moth, dark fore wings, lighter hind wings	Caterpillar, dark green or brown, 1 1/2" long	Cuts plants off near ground	Soil or liquid foliage application
	Brown Wheat Mite	Tiny brown mite, first 6-legged, then 8	Nymph, looks like small adult	Sucks sap from plant	Soil or liquid foliage application
	Flea Beetle	1/16" long, shiny, jumping, dark	Caterpillar, slender, white	Chew small holes in leaves	Soil or liquid foliage application

Crop Attacked	Insects	Adult Description	Larvae Description	Damage	Control
Wheat (con't.)	Hessian fly	Mosquito-like fly, dark-bodied, 1/10" long	Small red maggot, 1/16" long	Sucks juices from plants	No recommended chemical control, delay seeding until flies have emerged
	Pale Western Cutworm	Moth, lighter hind wings, dark fore wings	Caterpillar, transparent looking, 1 1/2" long	Cuts plants off near ground	Surface application, light tillage
Miscellaneous					
Corn, Small Grains	Grasshopper	Varies according to species	Nymph, looks like small adult	Eats foliage, stripping plants	Varies according to crop
Sorghum, Wheat	Greenbug	Yellowish-green aphid, dark green stripe down back	Nymph, looks like small adult	Sucks sap, weakening and killing plants	Sorghum: planting time application with systemic insecticide or foliage application Wheat: foliage application

V. Economic factors of plant insect control
   - A. Takes one billion a year
   - B. Over $4 billion annual loss
   - C. Damages 10% to 15% total crops

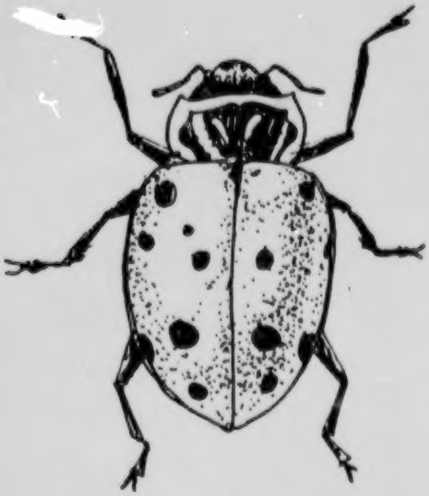
VI. Life cycles (Transparencies 2 and 3)
   - A. Four-stage group
   - B. Three-stage group

VII. Insecticide classification
   - A. Fumigant poisons - Enter the insect's body through the tracheal system in the form of a gas
   - B. Stomach poisons - Eaten and digested by the insect
   - C. Contact poisons - Absorbed through the insect's skin or body wall and act on the pest's nervous system

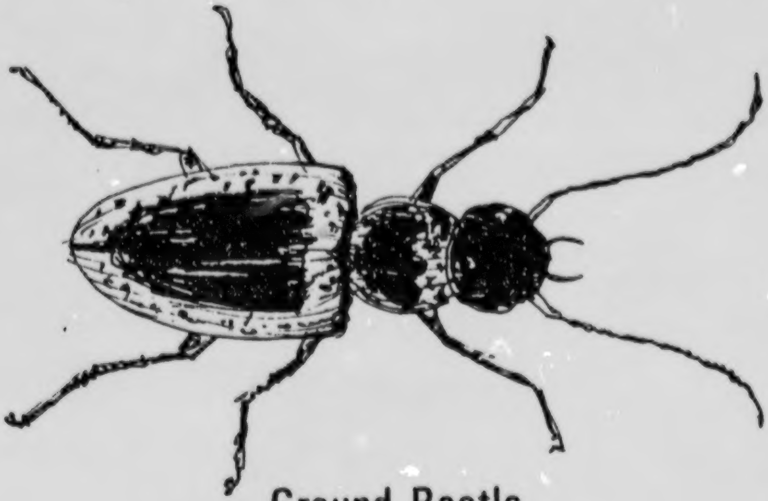
VIII. Methods of insect control
   - A. Natural
     - 1. Climate
     - 2. Temperature
     - 3. Rainfall
     - 4. Sunshine
     - 5. Predatory insects
     - 6. Parasites
     - 7. Diseases
   - B. Artificial
     - 1. Mechanical
       - a. Insect traps
       - b. Colored lights
       - c. Electric grids
     - 2. Cultural
       - a. Rotation of crops
       - b. Tillage
       - c. Planting dates
       - d. Drainage
       - e. Resistant plant varieties

3. Biological
    a. Predatory insects
    b. Parasites
    c. Diseases
    d. Male sterile insects
4. Chemical

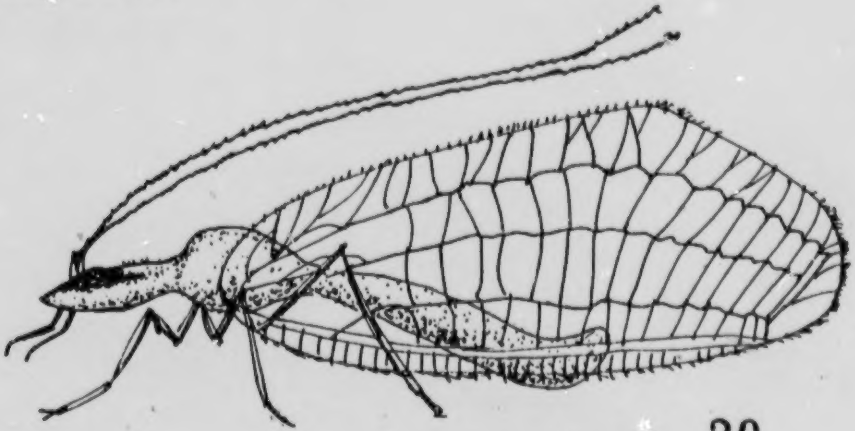
Beneficial Insects



Lady Beetle

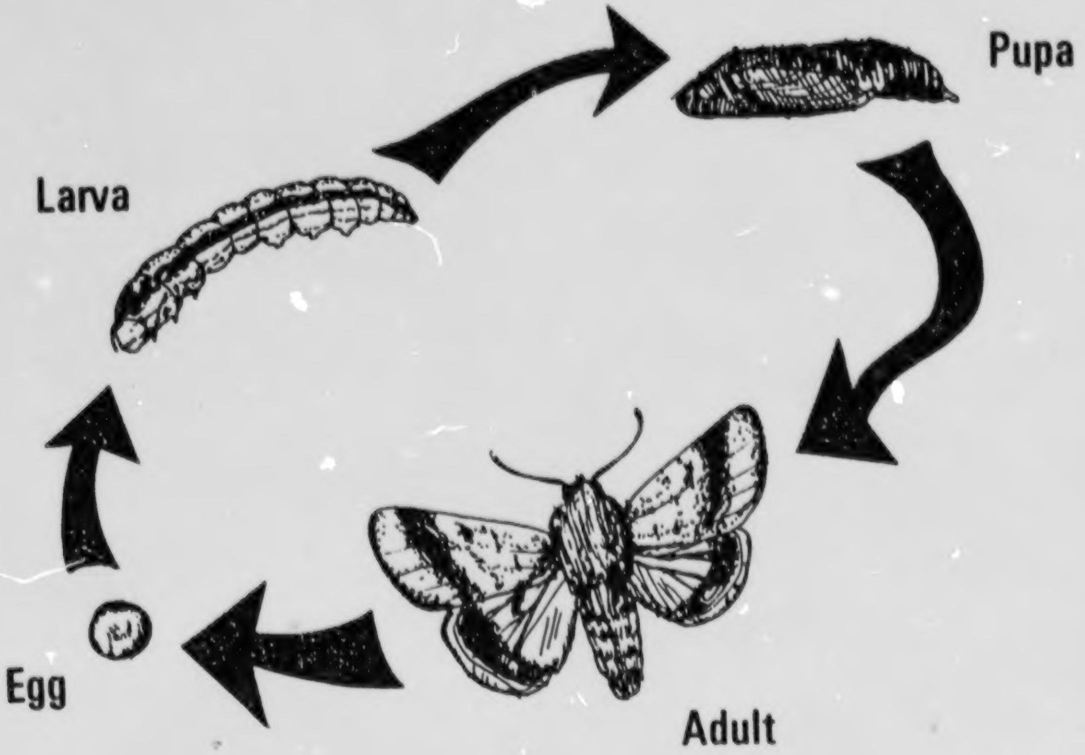


Ground Beetle

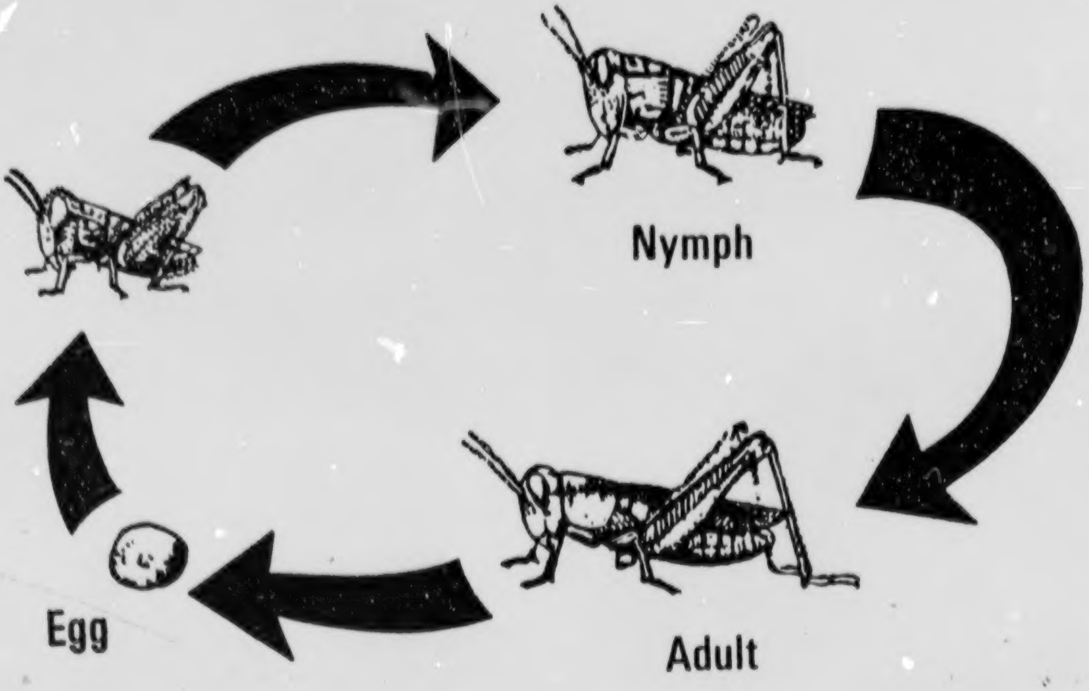


Lacewing

Life Cycle of Insects


Pupa
Larva
Egg
Adult

Life Cycle of Insects


Nymph
Adult
Egg

PLANT INSECT CONTROL
UNIT VII

ASSIGNMENT SHEET #1--COLLECTING AND IDENTIFYING INSECTS

Survey your local community and collect five specimens of insects. List the insects on the chart below and indicate their method of feeding and the crops they attack.

INSECT	METHODS OF FEEDING		CROP ATTACKED
	SUCKING	CHEWING	
1.			
2.			
3.			
4.			
5.			

PLANT INSECT CONTROL
UNIT VII

TEST

1. Match the words with the correct definition

_____a. The stages in the life development of insects

_____b. A young insect which looks much like a small adult insect

_____c. A poisonous chemical that is used to control pests

_____d. A chemical used to kill insects

_____e. Any small boneless animal whose body is divided into three sectional and has six legs

1. Nymph
2. Insect
3. Life cycle
4. Insecticide
5. Pesticide

2. Name five factors used in controlling insects.

a.

b.

c.

d.

e.

3. Match the terms on the right with the insects on the left.

_____a. Aphids

_____b. Cutworms

_____c. Armyworms

_____d. Mites

_____e. Chinch bugs

_____f. Grasshoppers

_____g. Greenbugs

_____h. Hessian flies

_____i. Southwestern corn borers

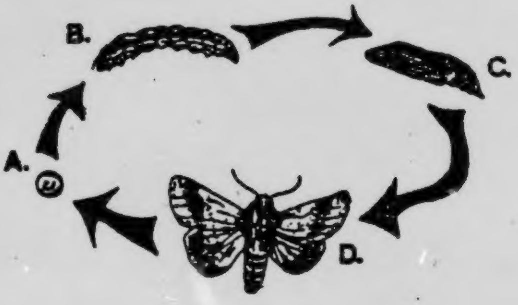
1. Chewing
2. Sucking

4. Arrange the insects listed below into two groups according to harmful or beneficial.

	Harmful	Beneficial
a. Lacewing larva	1.	1.
b. Grasshoppers	2.	2.
c. Ground beetles	3.	3.
d. Cutworms	4.	4.
e. Aphids	5.	5.
f. Lady beetles	6.	6.
g. Armyworms	7.	7.
h. Chinch bug	8.	8.

5. Discuss the economic factors relating to plant insect control.

6. Label a drawing showing the life cycle of most insects.



a.______________________________

b.______________________________

c.______________________________

d.______________________________

7. Define the following terms:

   a. Fumigant poison -

   b. Stomach poison -

   c. Contact poison -

8. a. Climate, temperature, and rainfall are considered to be ________________ methods of insect control.

   b. Tillage, planting dates, and improved plant varieties are considered to be________________________ methods of insect control.

9. Complete the chart below.

INSECT	ADULT DESCRIPTION	DAMAGE	CROPS ATTACKED
Grasshopper			
Fall Armyworm			
Hessian fly			
Alfalfa Weevil			
Greenbug			

PLANT INSECT CONTROL
UNIT VII

ANSWERS TO TEST

1. a. 3
   b. 1
   c. 5
   d. 4
   e. 2

2. Any five of the following:
   a. Tillage, pasturing, and planting
   b. Rotation and selection of crops
   c. Planting dates
   d. Destruction of trach
   e. Quarantine areas
   f. Biological control
   g. Poison baits
   h. Chemical control

3. a. 2
   b. 1
   c. 1
   d. 2
   e. 2
   f. 1
   g. 2
   h. 2
   i. 1

4.

Harmful	Beneficial
1. b	1. a
2. d	2. c
3. e	3. f
4. g.	
5. h	

5. Discussion should mention the following:
   a. $1 billion needed per year to control insects
   b. Insects cause over $4 billion worth of damage to crops each year

6. a. Egg
   b. Larva
   c. Pupa
   d. Adult

7. a. Fumigant poison - enters the insect's body throught the tracheal system in the form of a gas
   b. Stomach poison - eaten and digested by the insect
   c. Contact poison - absorbed through the insect's skin or body wall and acts on the pest's nervous system

8. a. Natural
   b. Artificial

9.

INSECT	ADULT DESCRIPTION	DAMAGE	CROPS ATTACKED
Grasshopper	Varies according to species	Eats foliage, stripping plant	Corn, small grains
Fall Armyworm	Moth, gray-, white-, or dull-colored, 1 1/4" wing spread	Eats foliage	Wheat
Hessian fly	Mosquito-like fly, dark bodied, 1/10" long	Sucks juices from plants	Wheat
Alfalfa weevil	Snout beetle, 3/16" long, brown to black with faint lighter markings	Adults and larvae feed on growing tips, leaves, and buds	Alfalfa
Greenbug	Yellowish-green aphid, dark green stripe down back	Sucks sap, weakening and killing plant	Sorghum, wheat

PLANT AND SOIL SCIENCE
UNIT I

TERMINAL OBJECTIVES

After completion of this unit, the student should be able to discuss the importance of crop production and identify the various plants common to Kansas. He should also be able to classify plants and discuss factors affecting crop production. He should be able to identify occupations in the plant and soil science area. This knowledge will be evidenced by scoring eighty-five percent on a unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with plant and soil science to the correct definitions.
2. List three reasons crop production is important.
3. List five major crops grown in Kansas.
4. List five major crops grown in the U.S.
5. Classify plants by matching them with the correct class.
6. Match the percentage of land use in the U.S. and Kansas with its correct use.
7. List three general factors affecting the crop to be grown in a particular area.
8. Match occupations in the plant and soil science area with the appropriate description.
9. Identify the parts of the grass plant.
10. Collect and identify ten pasture and range plants and five weeds common to the community.

PLANT AND SOIL SCIENCE
UNIT I

SUGGESTED ACTIVITIES

I. Instructor:
   A. Provide students with objective sheet.
   B. Provide students with information and assignment sheets.
   C. Make transparencies.
   D. Discuss terminal and specific objectives.
   E. Discuss information sheet.
   F. Collect pasture and range plants and weeds to be used in identification.
   G. Show slides of plants and weeds.
   H. Give test.

II. Student:
   A. Read objectives.
   B. Study information sheet.
   C. Collect samples of pasture and range plants and weeds common to your area.
   D. Identify pasture and range plants and weeds provided by the teacher.
   E. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:
   A. Objective sheet
   B. Information sheet
   C. Transparency masters
      1. TM 1 - Economic Values of Crops in the State and Nation
      2. TM 2 - Major Use of Land
      3. TM 3 - Major Crop Areas - United States
      4. TM 4 - Cropland Acreage in Kansas by County
      5. TM 5 - Principle Parts of a Grass Plant
   D. Assignment sheet
      1. Assignment Sheet #1 - Collect and Identify Common Weeds and Pasture and Range Plants

II. References:

A. Hughes, Harold D. and Edwin R. Hensen. Crop Production. New York: The Macmillan Co., 1967.

B. Instructional Materials for Vocational Agriculture I. College Station, Texas: Teaching Materials Center, Agricultural Education Department, Texas A & M University.

C. Some Identifying Characteristics of 52 Ohio Seed. Columbus, Ohio: Department of Agricultural Education, The Ohio State University.

D. Dictionary of Occupational Titles. Washington, D.C. United States Government Printing Office.

E. Kansas Agriculture - 58th Annual Report, Kansas State Board of Agriculture, State Printer, Topeka, Kansas 66612.

F. 1974 Census of Agriculture, United States Department of Agriculture, Washington D.C. (May be obtained from your Congressman)

G. Agricultural Statistics 1975, United States Department of Agriculture, U.S. Government Printing Office, Washington D.C.

PLANT AND SOIL SCIENCE
UNIT I

INFORMATION SHEET

I. Terms and definitions

   A. Agronomy - Science of crop production and soil management

   B. Annual - Plant which completes its life cycle in one year

   C. Perennial - Plant which lives more than one year, but in some cases, produces seed the first year

   D. Arable land - Land which is capable in its present condition of producing crops requiring tillage

   E. Arid climate - Climate in which the annual rainfall is less than ten inches

   F. Cereal - Grass grown to be used for feed and seed

   G. Fertility - Amount of nutrients in the soil to support plant growth

   H. Forage - Livestock feeds, such as pasture, hay, or silage

   I. Legume - Soil improving plant which manufactures nitrogen

   J. Range - Extensive area of natural pasture land

   K. Weed - Undesirable plant growing with a crop-a plant out of place

   L. Cool season plant - One which grows during the fall, winter, or spring

   M. Warm season plant - One which grows during the summer and early fall

   N. Native - Plant originating in North America that is native to a particular region

   O. Introduced - Plant brought in from countries outside the United States

   P. Climax - Top ranking native plants in the area

   Q. Decreaser - Plant that decreases on a range when exposed to heavy grazing pressures

   R. Increaser - Plant that increases on a range when decreasers are reduced

   S. Invader - Plant which comes into a range after both increasers and decreasers have been reduced

   T. Grazing value - Worth of a plant for livestock production

   Examples:
   1. Good - Plants with top quality grazing value
   2. Fair - Plants with medium quality grazing value
   3. Poor - Plants with low quality grazing value

U. Awn - Pointed bristle-like appendage

V. Hull - Outside covering of a seed

W. Rachilla - Small stalk attached at the bottom of certain grass seeds

X. Spikelet - Seed containing unit of the grass plant

(NOTE: A spikelet may contain several seeds or a single seed.)

II. Importance of crop production

- A. Furnishes food
- B. Protects the soil
- C. Beautifies the environment
- D. Provides jobs

III. Major crops grown in Kansas (Transparency 1)

	Acres Harvested 1977
A. Winter wheat	12,100,000
B. All hay	2,290,000
1. Wild hay (prairie, march, or salt grass)	810,000
2. Alfalfa hay	1,010,000
3. Tame hay other than alfalfa	470,000
C. Barley	65,000
D. Grain sorghum for all purposes	4,780,000
1. For grain	4,050,000
2. For forage & silage	730,000
E. Oats	210,000
F. Soybeans	990,000
G. Rye	10,000
H. Corn for all purposes	1,985,000
1. For grain	1,680,000
2. For forage & silage	290,000
I. Popcorn	10,100
J. Sugar beets	24,000
K. Dry beans	12,500

IV. Major crops grown in U.S.

- A. Corn
- B. Wheat (winter & spring)

- C. Oats
- D. Barley
- E. Rye
- F. Grain sorghum
- G. Cotton
- H. Tobacco
- I. Rice
- J. Sugar crops
- K. Alfalfa
- L. Soybeans
- M. Peanuts

V. Classes of plants

- A. Cereals
    - 1. Rice
    - 2. Wheat
    - 3. Corn
    - 4. Oats
- B. Root crops
    - 1. Potatoes
    - 2. Sweet potatoes
- C. Tree crops
    - 1. Pecans
    - 2. Apples
    - 3. Peaches
- D. Oil seed crops

    (NOTE: These may be used for seed or oil.)
    - 1. Soybean
    - 2. Peanut
    - 3. Cotton seed
- E. Pulses--Leguminous plant or their seeds

    (NOTE: This includes chiefly those plants with large seed used for food.)
    - 1. Beans
    - 2. Peas

VI. Land use

A. In the United States (Transparencies 2 and 3)

1.	Total acres -	263,587,000 acres
2.	Cities, roads, railroads, parks, etc.	6.3 %
3.	Desert, swamp, rock, etc.	12.9 %
4.	Cropland	20.2 %
5.	Grassland, pasture and grazing land	27.8 %
6.	Forest land	32.8 %

B. In Kansas (Transparency 4)

1.	Total land area	52,344,000 acres
2.	Land in farms	48,500,000 acres
3.	Percent of land area in farms	92.7 %
4.	Number of farms	76,000
5.	Average size of farms	638 acres
6.	Total cropland -	29,984,268 acres
7.	Total woodland	1,564,000 acres

(NOTE: Compare county statistics with state statistics.)

VII. Factors affecting crop production

A. Soil fertility
B. Climatic conditions
C. Economic factors
D. Type of land

VIII. Occupations in plant and soil science

A. Farmer - Raises crops to sell

B. Farm laborer - Works for farmer

C. Farm manager - Manages farms for owners

D. Grain elevator employee - Loads, unloads, weighs, and handles grain at an elevator

E. Soil conservation worker - Works with and assists farmers with problems on soil conservation

F. Seed dealers - Sells seed

G. College teacher and researcher - Teaches students and researches agronomy, plant science, soil science, and other courses

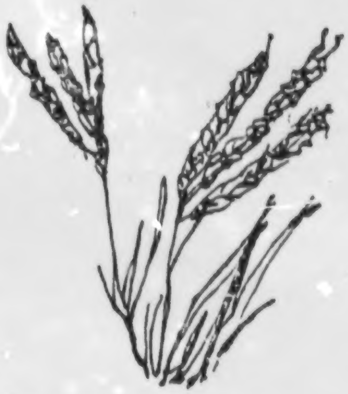
(NOTE: For other occupations in the field of plant and soil science, check The Dictionary of Occupational Titles, available from U.S. Government Printing Office. Also, check with school counselor.)

IX. Parts of a grass plant (Transparency 5)

   A. Inflorescence
   B. Florets
   C. Culm
   D. Second glume
   E. Awn
   F. Node
   G. First glume
   H. Internode
   I. Sheath
   J. Blade
   K. Ligule
   L. Collar
   M. Shoot
   N. Auricle
   O. Crown
   P. Stolon
   Q. Rhizome or underground stem
   R. Fibrous roots

X. Common pasture and range plants

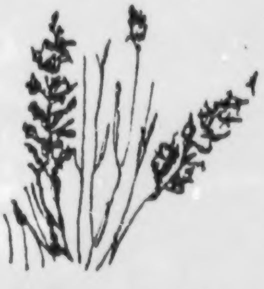
   A. Big bluestem--Perennial, warm season, native, decreaser, good grazer



      1. Plant - Tail grass, short roots, stemmy, hair at base

      2. Seed - Long, very small, head branches into three parts resembling a turkey's foot

   B. Indiangrass--Perennial, warm season, native, decreaser, good grazer



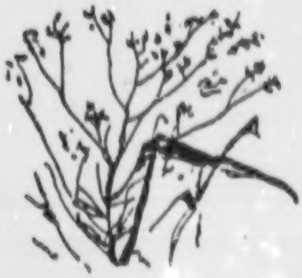
      1. Plant - Tall grass, ligule at base of leaf attached to stem

      2. Seed - Produced in heads like sorghum, golden in color

C. Switchgrass—Perennial, warm season, native, decreaser, good grazer

1. Plant - Tall grass, large seed head, white hair present at base of leaf

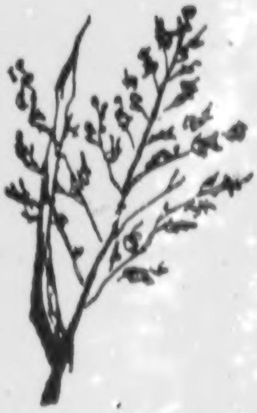
2. Seed - Large, sprangled-type head



D. Johnsongrass—Perennial, warm season, introduced

1. Plant - Tall grass, wide leaves, thick light-colored mid-vein

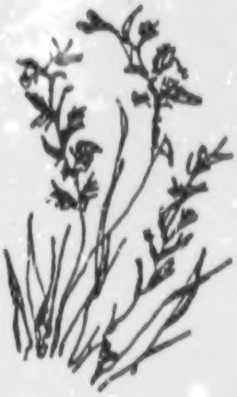
2. Seed - Glossy and black to ivory in color



E. Little bluestem—Perennial, warm season, native, decreaser, good grazer

1. Plant - Deep roots, bluish stem, leaves tend to fold

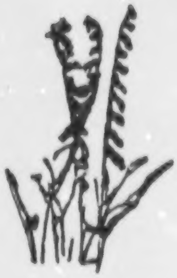
2. Seed - White in color, very small, soft



F. Sideoat grama--Perennial, warm season, native, increaser

1. Plant - Oatlike seeds produced on one side of plant

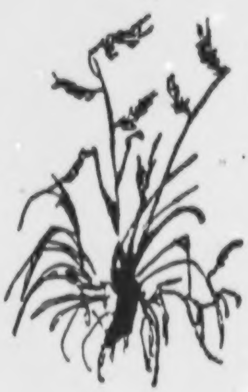
2. Seed - Small, produced in large quantities



G. Hairy grama--Perennial, warm season, native, increaser

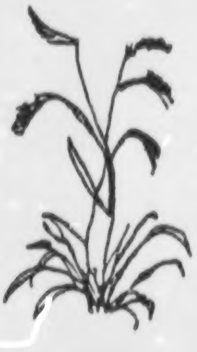
1. Plant - Short grass, comblike seed head

2. Seed - Covered with hair, curved needle-like points



H. Blue grama--Perennial, warm season, native, increaser

1. Plant - 10-20 inches high, bunch grass, reproduces by seed

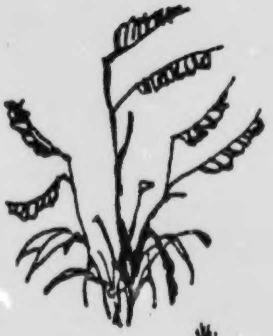


2. Seed - Curved, resembling human eyebrow

I. Buffalograss--Perennial, warm season, native, increaser

1. Plant - Short grass, leaves close to ground

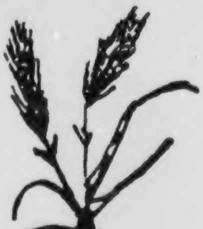
2. Seed - Produced in burs, each bur contains 1-4 seeds



J. Canada wildrye--Perennial, cool season, native, increaser

1. Plant - Tall grass, spear-like blades

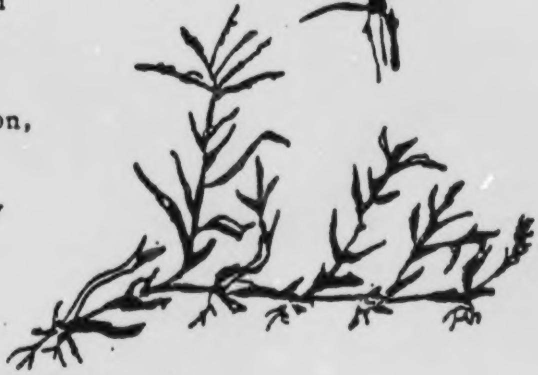
2. Seed - Long awn, curve downward after maturing



K. Bermudagrass--Perennial, warm season, introduced, good grazer

1. Plant - Sod forming, spreads by runners

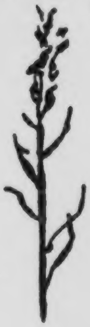
2. Seed - Produced in slender spike-flowering heads



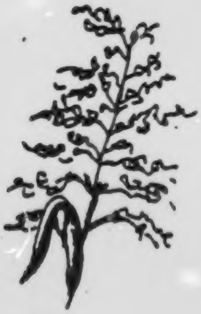
L. Cheat--Annual, cool season, introduced

1. Plant - Grassy plant, 5-15 florets per spikelet

2. Seed - Straw-colored, canoe-shaped, rachilla joint

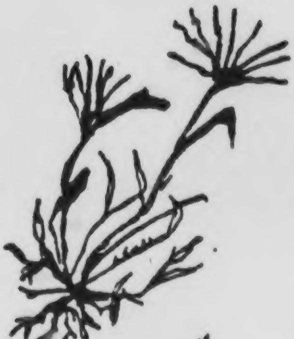


M. Sudangrass--Annual, warm season, introduced



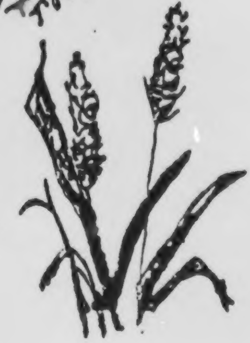
1. Plant - Tall grass, long seed head
2. Seed - Round, yellow, pink or red, short rachilla

N. Crabgrass--Annual, warm season, introduced, invader



1. Plant - Leaf blades somewhat hairy, seeds borne in 3-10 segments
2. Seed - Straw color to green or purple, 3 ribbed, pointed one end, somewhat hairy

O. Foxtail--Annual, warm season, introduced



1. Plant - Golden pump-like seed head, claw-like ligule where leaf attaches to stem
2. Seed - Yellow to brown, large

P. Additional plants to be added by local instructor.

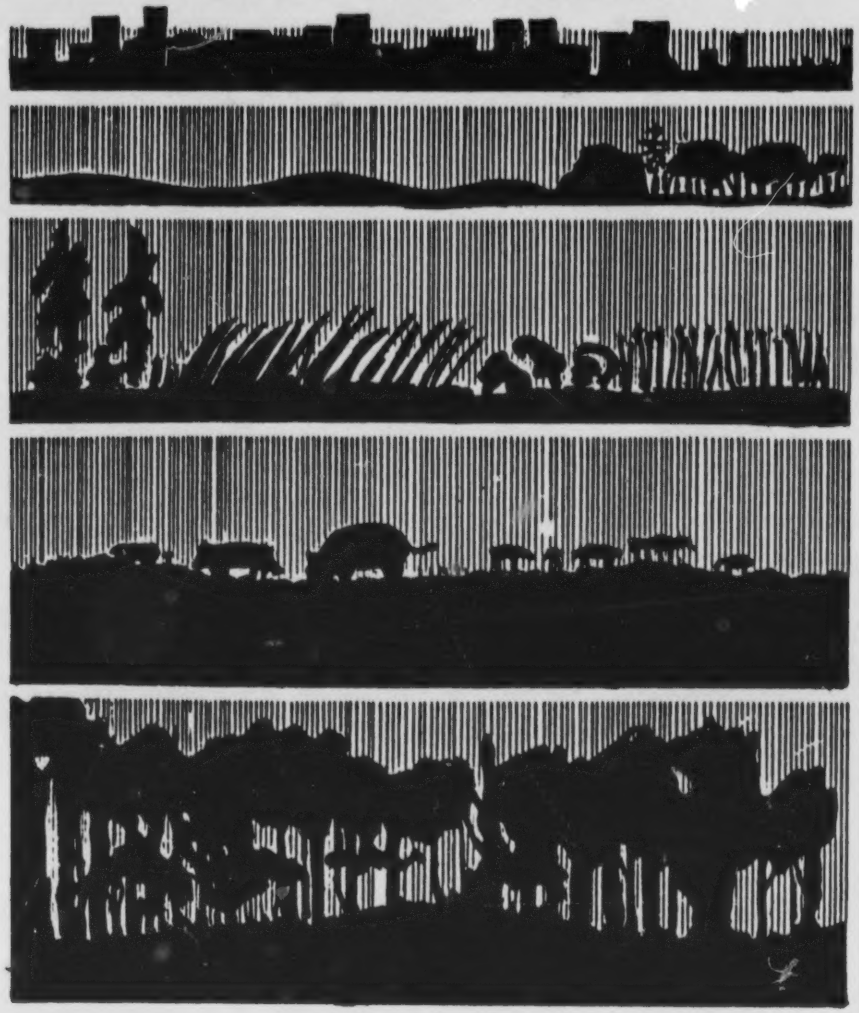
ECONOMIC VALUES OF CROPS IN THE STATE AND NATION

CROP	FARM VALUE IN THOUSANDS OF DOLLARS			THOUSAND ACRES HARVESTED		
	NATION '77	STATE '77	COUNTY	NATION '77	STATE '77	COUNTY
WHEAT	4,677,339	741,428		66,216	12,100	
GRAIN SORGHUM (FOR GRAIN)	1,357,262	393,660		14,065	4,050	
OATS	853,434	10,395		13,447	210	
BARLEY	746,199	3,510		9,490	65	
CORN	12,886,621	378,702		70,006	1,985	
SUGAR BEETS	662,103	7,819		1,218	24	
SOYBEANS	9,944,975	148,302		57,911	990	
HAY (ALL)	6,801,364	227,642		60,493	2,290	

42

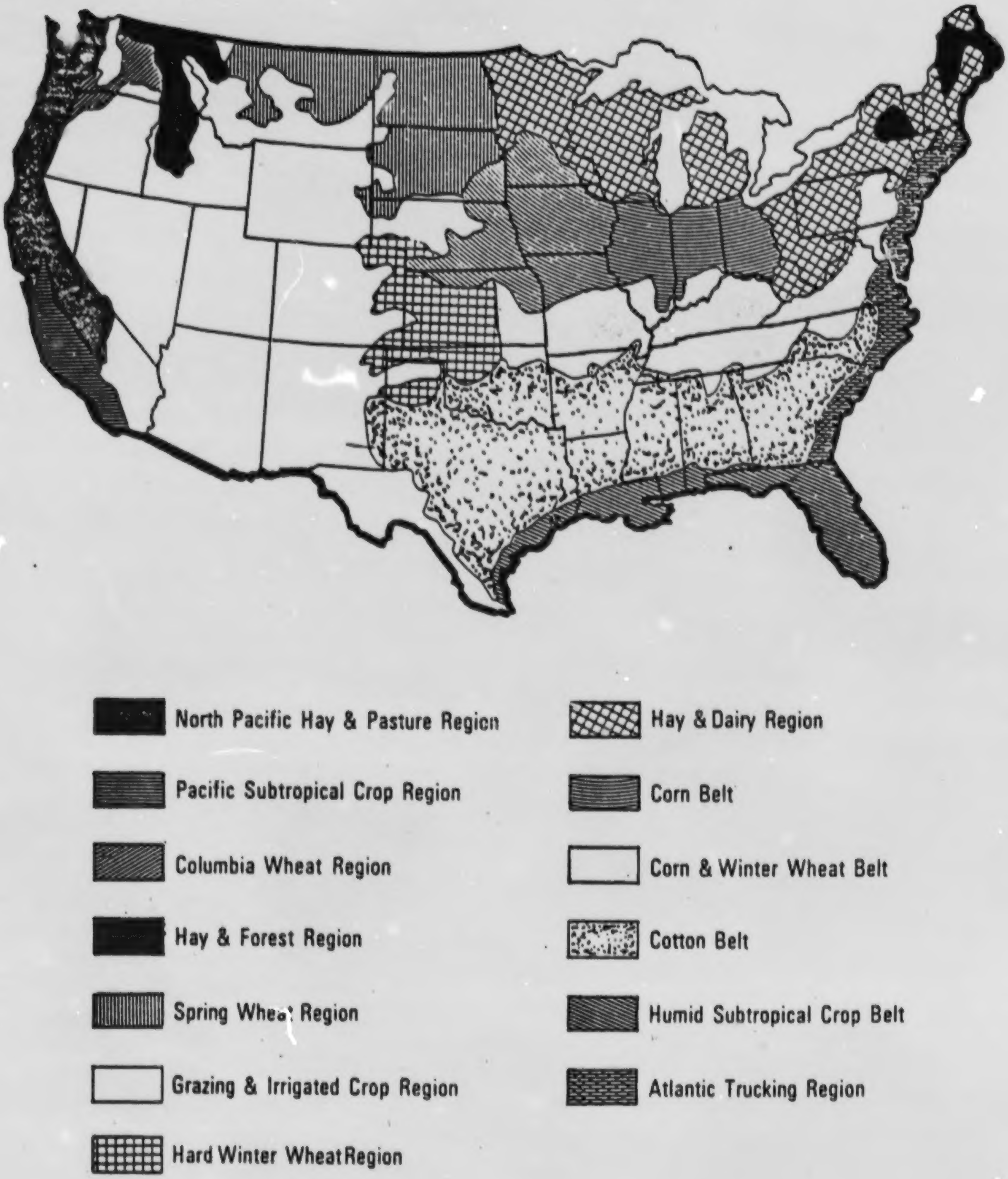
Major Use of Land

TOTAL U.S. ACREAGE - 2,271 MILLION ACRES

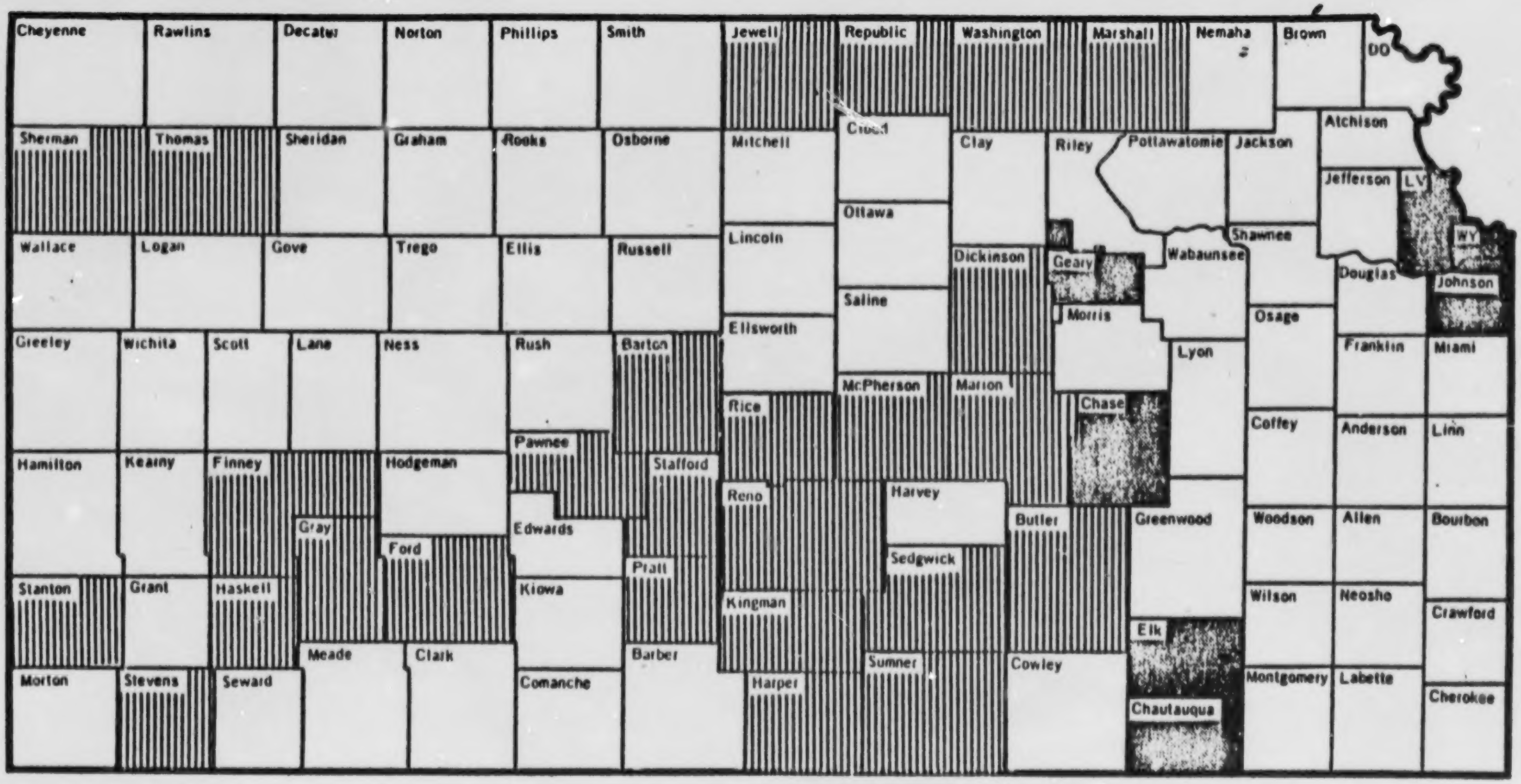


PERCENT	TYPE OF LAND
6.3 %	Cities, roads, railroads, parks, etc.
12.9 %	Desert, swamp, rock, etc.
20.2 %	Cropland
27.8 %	Grassland, pasture and grazing land
32.8 %	Forest land

Major Crop Areas- United States


North Pacific Hay & Pasture Region
Pacific Subtropical Crop Region
Columbia Wheat Region
Hay & Forest Region
Spring Wheat Region
Grazing & Irrigated Crop Region
Hard Winter Wheat Region
Hay & Dairy Region
Corn Belt
Corn & Winter Wheat Belt
Cotton Belt
Humid Subtropical Crop Belt
Atlantic Trucking Region

HARVESTED CROPLAND ACREAGE IN KANSAS BY COUNTY


Cheyenne
Rawlins
Decatur
Norton
Phillips
Smith
Jewell
Republic
Washington
Marshall
Nemaha
Brown
DO
Sherman
Thomas
Sheridan
Graham
Rooks
Osborne
Mitchell
Cloud
Clay
Riley
Pottawatomie
Jackson
Atchison
Jefferson
LV
Ottawa
WY
Wallace
Logan
Gove
Trego
Ellis
Russell
Lincoln
Dickinson
Geary
Wabaunsee
Shawnee
Douglas
Johnson
Saline
Morris
Osage
Greeley
Wichita
Scott
Lane
Ness
Rush
Barton
Ellsworth
Lyon
Franklin
Miami
McPherson
Marion
Rice
Chase
Coffey
Anderson
Linn
Pawnee
Hamilton
Kearny
Finney
Hodgeman
Stafford
Reno
Harvey
Butler
Greenwood
Woodson
Allen
Bourbon
Gray
Ford
Edwards
Pratt
Sedgwick
Stanton
Grant
Haskell
Kiowa
Kingman
Wilson
Neosho
Crawford
Elk
Meade
Clark
Barber
Morton
Stevens
Seward
Comanche
Harper
Sumner
Cowley
Chautauqua
Montgomery
Labette
Cherokee

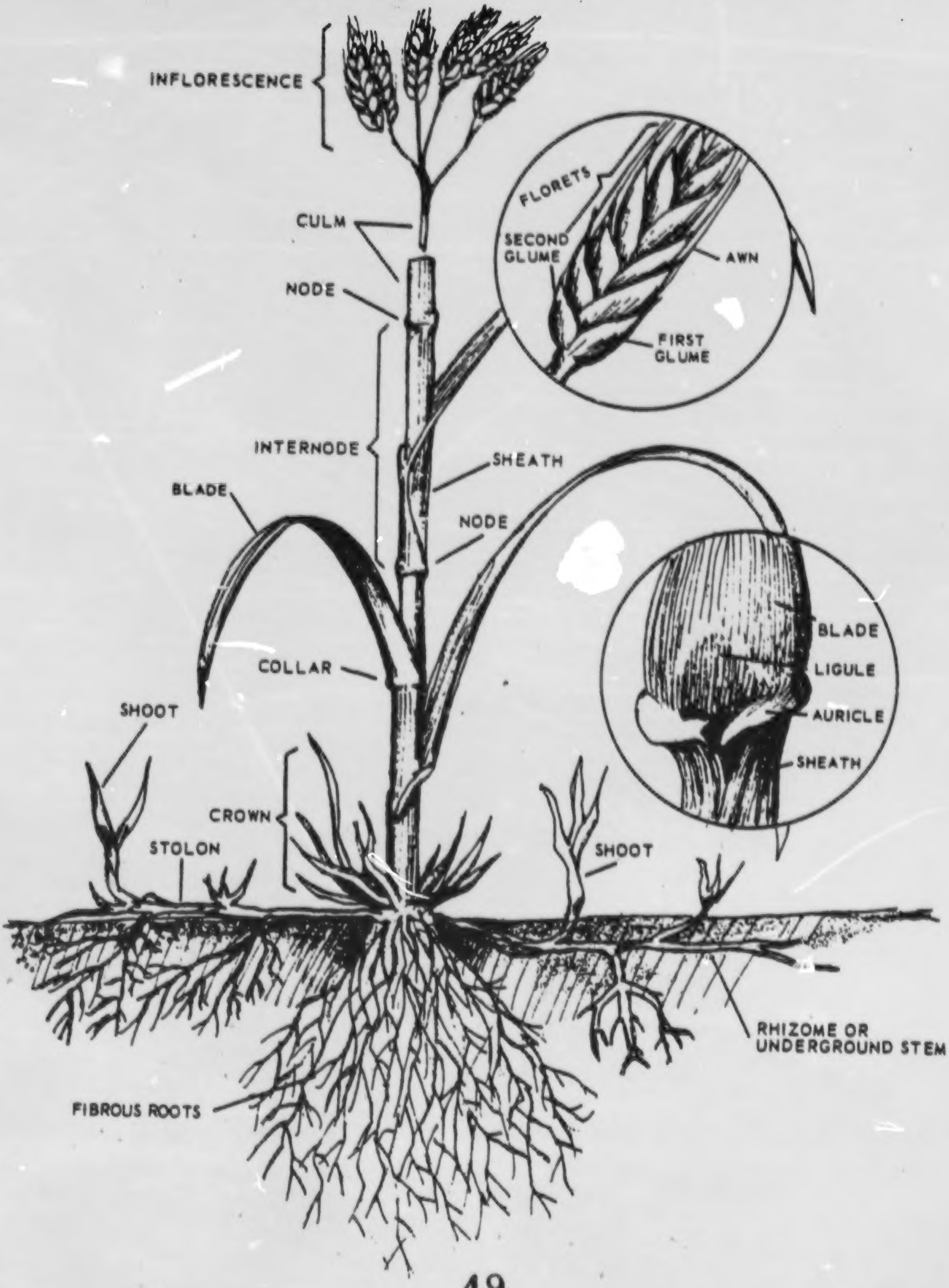
LEGEND

■ 100,000 acres or less

□ 100,000 - 250,000 acres

▥ over 250,000 acres

Principle Parts of a Grass Plant


INFLORESCENCE
FLORETS
CULM
SECOND GLUME
AWN
NODE
FIRST GLUME
INTERNODE
SHEATH
BLADE
NODE
BLADE
LIGULE
COLLAR
AURICLE
SHOOT
SHEATH
CROWN
STOLON
SHOOT
RHIZOME OR UNDERGROUND STEM
FIBROUS ROOTS

ASSIGNMENT SHEET #1 - COLLECT AND IDENTIFY WEEDS AND PASTURE AND RANGE PLANTS

Each student should collect and identify five weeds and ten pasture and range plants common to his community. Assign each specimen collected a number and list the name of the plant by that number. When complete turn in to instructor for evaluation.

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.

15.

PLANT AND SOIL SCIENCE
UNIT I

TEST

1. Match the terms on the right to the correct definition.

_____a. Plant which completes it life cycle in one year

_____b. Grass grown to be used for feed and seed

_____c. Extension area of natural pasture land

_____d. One which grows during the summer and early fall

_____e. Plant that decreases on a range when exposed to heavy grazing pressures

_____f. Pointed bristle-like appendage

_____g. Science of crop production and soil management

_____h. Climate in which the annual rainfall is less than ten inches

_____i. Livestock feeds, such as pasture, hay, or silage

_____j. Top ranking native plants in the area

_____k. Plant that increases on a range when decreasers are reduced

_____l. Outside covering of a seed

_____m. Soil improving plant which manufactures nitrogen

_____n. Plant which lives more than one year, but in some cases, produces seed the first year

1. Agronomy
2. Annual
3. Perennial
4. Arable land
5. Arid climate
6. Cereal
7. Fertility
8. Forage
9. Legume
10. Range
11. Weed
12. Cool season plant
13. Warm season plant
14. Native
15. Introduced
16. Climax
17. Decreaser
18. Increaser
19. Invader
20. Grazing value
21. Awn
22. Hull
23. Rachilla
24. Spikelet

_____o. Land which is capable in its present condition of producing crops requiring tillage

_____p. Undesirable plant growing with a crop

_____q. One which grows during the fall, winter, or spring

_____r. Plant originating in North America

_____s. Seed containing unit of grass plant

_____t. Small stalk attached at the bottom of certain grass seeds

_____u. Worth of a plant for livestock production

_____v. Plant which comes into a range after both increasers and decreasers have been reduced

_____w. Plant brought in from countries outside the U.S.

_____x. Amount of nutrients in the soil to support plant growth

2. List three reasons crop production is important.

   a.

   b.

   c.

3. List five major crops grown in Kansas.

   a.

   b.

   c.

   d.

   e.

4. List five major crops grown in the United States.

a.

b.

c.

d.

e.

5. Classify the following plants by matching them with the correct plant class. (Classes may be used more than once.)

_____a. Potatoes

_____b. Rice

_____c. Wheat

_____d. Pecans

_____e. Beans

_____f. Soybeans

_____g. Apples

_____h. Corn

Plant Classes

1. Cereals
2. Root crop
3. Oil seed
4. Pulses
5. Tree crop

6. Match the percentage of land use in the United States and Kansas with its correct land use.

a. U.S.

_____1) Cropland

_____2) Forest Land

_____3) Cities, roads, railroads, etc.

_____4) Desert, swamp, rock, etc.

_____5) Grassland, pasture, and grazing land

a. 6.3%

b. 12.9%

c. 20.2%

d. 27.8%

e. 32.8%

b. Kansas

_____1) Total land area

_____2) Land in farms

_____3) Percent of land area in farms

_____4) Number of farms

_____5) Average size of farms

_____6) Total cropland

_____7) Total woodland

a. 92.7%

b. 638 Acres

c. 785,242 Acres

d. 52,344,000 Acres

e. 76,000 Farms

f. 29,984,268 Acres

g. 48,500,000 Acres

7. List three general factors affecting the crop to be grown in a particular area.

a.

b.

c.

8. Match plant and soil science occupations on the right with the appropriate description on the left.

_____a. Works with and assists farmers

_____b. Teaches students

_____c. Handles grain

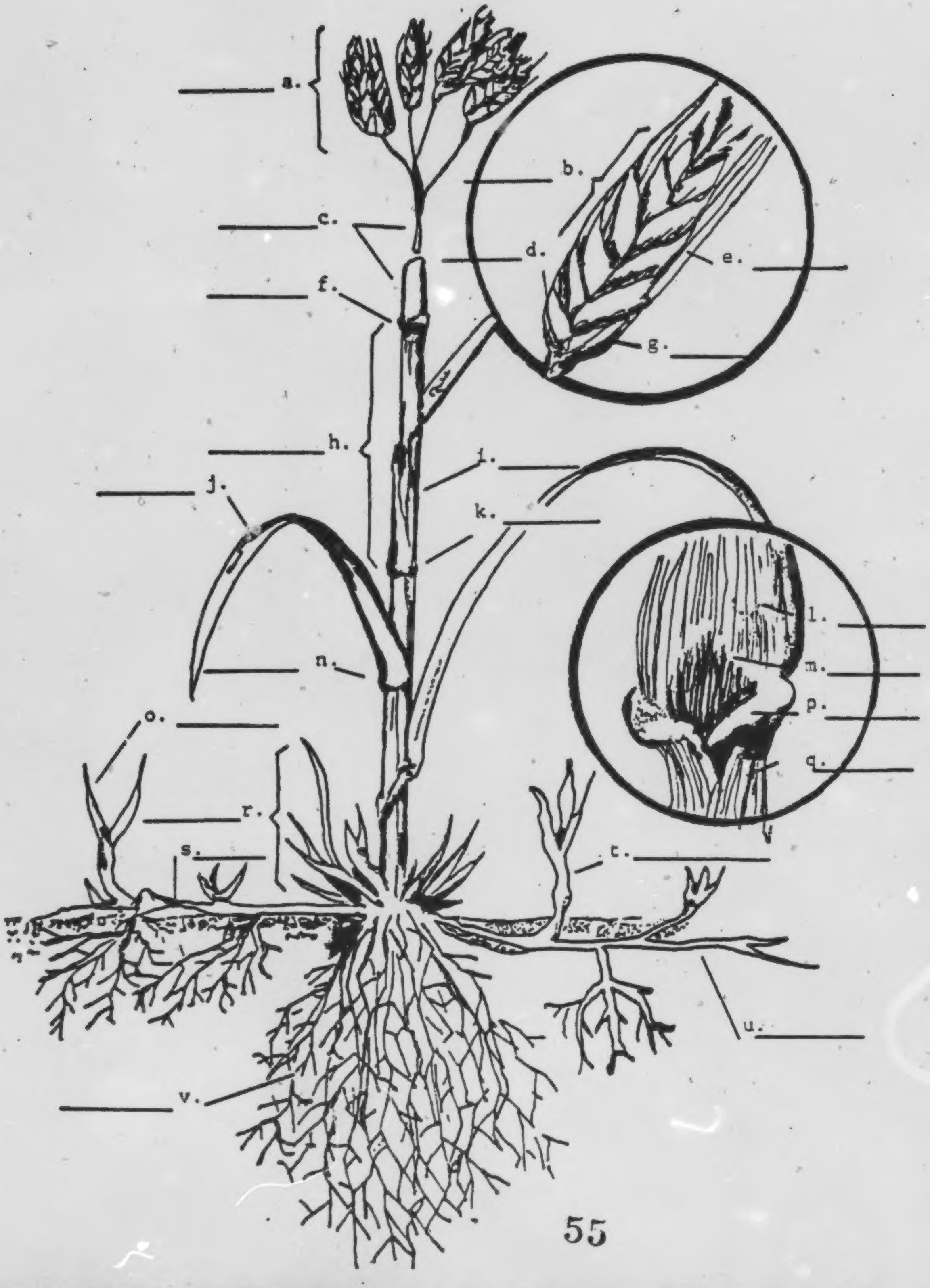
_____d. Raises crops

_____e. Works for farmers

_____f. Manages

1. Farm laborer
2. Soil conservation worker
3. Grain elevator employee
4. Farmer
5. College teacher
6. Farm manager

9. Label the parts of this grass plant.



a.
b.
c.
d.
e.
f.
g.
h.
i.
j.
k.
l.
m.
n.
o.
p.
q.
r.
s.
t.
u.
v.

10. Collect and identify five weeds and ten pasture and range plants common to the community.

(NOTE: If this has not been accomplished prior to the test, ask the instructor when the above activity should be completed.)

PLANT AND SOIL SCIENCE
UNIT I

ANSWERS TO TEST

1. a. 2
   b. 6
   c. 10
   d. 13
   e. 17
   f. 21
   g. 1
   h. 5
   i. 8
   j. 16
   k. 18
   l. 22
   m. 9
   n. 3
   o. 4
   p. 11
   q. 12
   r. 14
   s. 24
   t. 23
   u. 20
   v. 19
   w. 15
   x. 7

2. Any three of the following:
   a. Furnishes food
   b. Protects the soil
   c. Beautifies the environment
   d. Provides jobs

3. Any five of the following:
   a. Winter wheat
   b. Hay
   c. Barley
   d. Grain sorghum
   e. Sugar beets
   f. Oats
   g. Soybeans
   h. Drybeans
   i. Rye
   j. Corn
   k. Popcorn

4. Any five of the following:
   a. Corn
   b. Wheat
   c. Oats
   d. Barley
   e. Rye
   f. Grain sorghum
   g. Cotton
   h. Tobacco
   i. Rice
   j. Sugar crops
   k. Alfalfa
   l. Soybeans
   m. Peanuts

5. a. 2
   b. 1
   c. 1
   d. 5
   e. 4
   f. 3
   g. 5
   h. 1

6. a. 1) c
      2) e
      3) a
      4) b
      5) d
   b. 1) d
      2) g
      3) a
      4) e
      5) b
      6) f
      7) c

7. Any three of the following:
   a. Soil fertility
   b. Climate conditions
   c. Economic factors
   d. Types of land

8. a. 2
   b. 5
   c. 3
   d. 4
   e. 1
   f. 6

9. a. Inflorescence
   b. Florets
   c. Culm
   d. Second glume
   e. Awn
   f. Node
   g. First glume
   h. Internode
   i. Sheath
   j. Blade
   k. Node
   l. Blade
   m. Ligule
   n. Collar
   o. Shoot
   p. Auricle
   q. Sheath
   r. Crown
   s. Stolon
   t. Shoot
   u. Rhizome or underground stem
   v. Fibrous roots

10. Evaluated to the satisfaction of the instructor.

PLANT DISEASES
UNIT VIII

TERMINAL OBJECTIVES

After completion of this unit, the student should be able to determine the nature and extent of the crop disease problem. He should be able to identify the disease and determine means of controlling. This knowledge will be evidenced by scoring eighty-five percent on a post test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Define five terms associated with plant diseases.
2. Name four ways to control plant diseases.
3. Classify a disease as either a fungus, bacteria, nematode, or a virus.
4. Label a drawing showing the life cycle of smut disease.
5. Construct a chart, when given the disease, telling crops affected, symptoms of the disease, and methods of control in your area.
6. Recognize plant damage and identify the disease causing the damage.
7. Survey the crop plant diseases common in your area and the crops each attacks.

PLANT DISEASES
UNIT VIII

SUGGESTED ACTIVITIES

I. Instructor:
   - A. Provide students with objective sheet.
   - B. Provide students with information sheets.
   - C. Make transparencies.
   - D. Discuss terminal and specific objectives.
   - E. Discuss information sheets.
   - F. Conduct field trips.
   - G. Give test.

II. Students:
   - A. Read objectives.
   - B. Study information sheets.
   - C. Collect plants showing disease damage.
   - D. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:
   - A. Objectives
   - B. Information sheets
   - C. Transparency masters
     - 1. TM 1 - Fungus Diseases
     - 2. TM 2 - Fungus Diseases
     - 3. TM 3 - Bacterial Diseases
     - 4. TM 4 - Bacterial Diseases
     - 5. TM 5 - Nematode Diseases
     - 6. TM 6 - Life Cycle of Smuts
   - D. Assignment sheet
     - 1. Assignment Sheet #1 - Surveying for Plant Disease Damage
   - E. Test
   - F. Answers to test

II. References:

A. Producing Farm Crops, Harold K. Wilson, A. Chester Richer, The Interstate Printers and Publishers, Inc., Danville, Illinois.

B. Crop Production, Richard J. Belorit, Henry L. Ahlgren, Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

C. Crop Production, Harold D. Hughes, Darrel S. Metcalfe, Iver J. Johnson, The Macmillan Company, New York.

D. Compendium of Plant Diseases, Rohm and Haas Company, Philadelphia, Pennsylvania.

PLANT DISEASES
UNIT VIII

INFORMATION SHEET

I. Terms and definitions

   A. Blight - The rapid discoloration and death of tissue over certain portions of plants

   B. Fungicide - A chemical substance used to kill fungi

   C. Dwarfing - The failure of any part of the plant or the entire plant to develop properly, caused by nutritional deficiencies or a disease condition

   D. Host - The plant in which the disease lives and obtains food

   E. Resistant - The inherited ability of a plant to tolerate and retard growth of disease organisms

   F. Fungus - A plant which lacks chlorophyll and obtains its food from other plant matter, dead or alive

   G. Parasitic plant - A plant which cannot manufacture its own food but lives on other living plants

   H. Ring spots - The yellowish rings on leaves with green tissue inside the ring

   I. Scale - A crust-like, diseased lesion produced as a result of disease infection

   J. Virus - A minute, protein-like substance capable of causing mosaic and other diseases

   K. Conkes - The dead area on a stem surrounded by living tissue

   L. Wilt - The loss of freshness and drooping of leaves

II. Plant disease control

   A. Use of resistant varieties

   B. Eradication of alternate host plants

   C. Treatment of soil

   D. Rotation of crops

   E. Destruction of plant residue

   F. Use of disease-free seed

III. Disease groups
  A. Fungus (Transparencies 1 and 2)
    1. Seedling disease
    2. Root rot
    3. Rusts
    4. Scab
    5. Smuts
    6. Rust fungus
    7. Ergot
  B. Bacteria (Transparencies 3 and 4)
    1. Bacterial blight
    2. Bacterial wilt
    3. Leaf spot
    4. Angular leaf spot
    5. Corn stalk rot

  C. Nematode (Transparency 5)
    1. Galls
    2. Root knot

  D. Virus - Mosaic

IV. Life cycle of smut disease (Transparency 6)

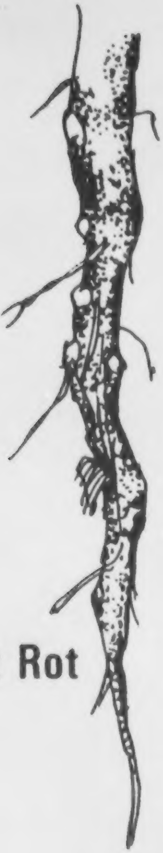
V. Common plant diseases

Disease	Crops Affected	Symptoms	Control
Root rot	Cotton, Alfalfa, Peanuts, Soybeans	Yellowing and bronzing of leaves; leaves become brown and dry	Rotation with other crops; use early maturing varieties
Rusts black stem	Wheat, Oats, Barley Rye, Grasses	Long brick-red pustules on stems and leaf sheaths; later turn black	Use resistant varieties and early-maturing varieties; treat seed when planting
Smuts	Corn, Sorghum, Oats, Barley, Rye, Wheat	Grayish-white galls on any part of plant, filled with mass of black spores at maturity	Crop rotation; use resistant hybrids; treat seeds
Bacterial blight	Soybeans, Sorghum, Corn	Light to dark-brown irregular spots without marginal halo on leaves, stems, and pods	Destroy crop residue; seed treatment; use resistant varieties
Bacterial wilt	Corn, Alfalfa	Leaves wilt, turn yellow, brown, and plant dies; stems show yellow discolored area	Rotation; use hardy and resistant varieties
Mosaic (virus)	Alfalfa, Soybeans	Plants may dwarf, vein yellowing with dwarfing of stems	Good insect control; rotation of crops
Ergot	Barley, Wheat, Rye	A blue-black, hard mass replaces the kernels in the head of the plant	Rotation; sow disease-free seed

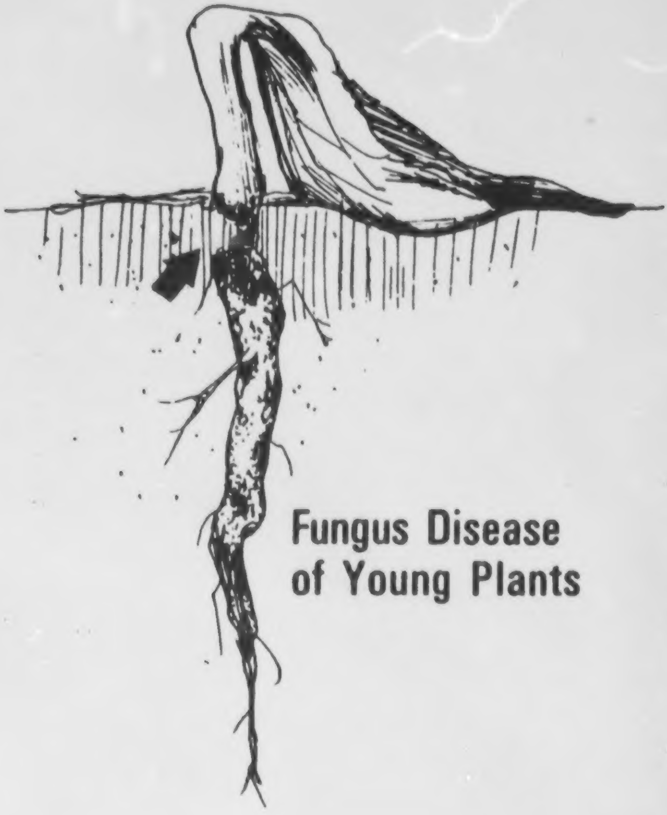
V. Common plant diseases (continued)

Disease	Crops Affected	Symptoms	Control
Nematodes	Wheat, Rye	Rolled or curled leaf, stem enlarged near the base, frequently bent	Use resistant varieties; plant disease-free seed

Fungus Diseases

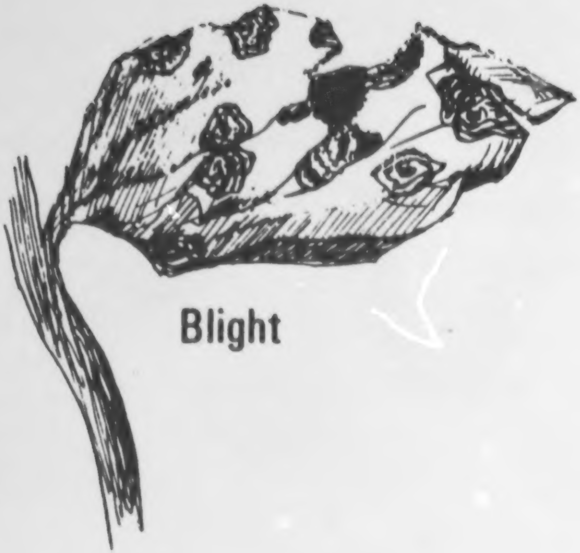


Root Rot

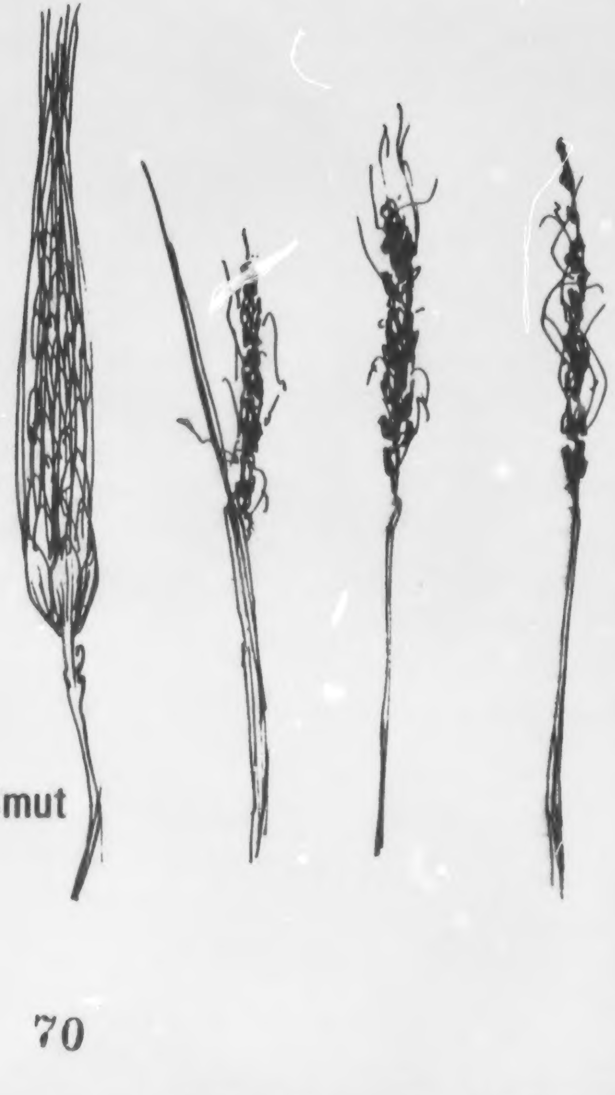


Fungus Disease of Young Plants

Fungus Diseases

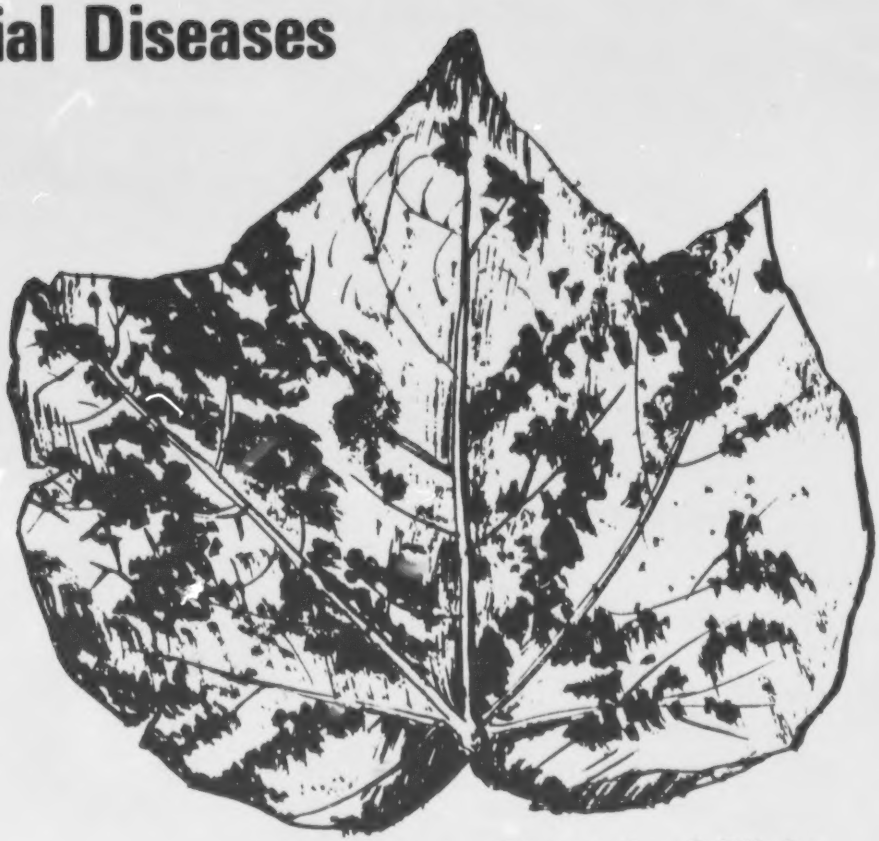


Blight



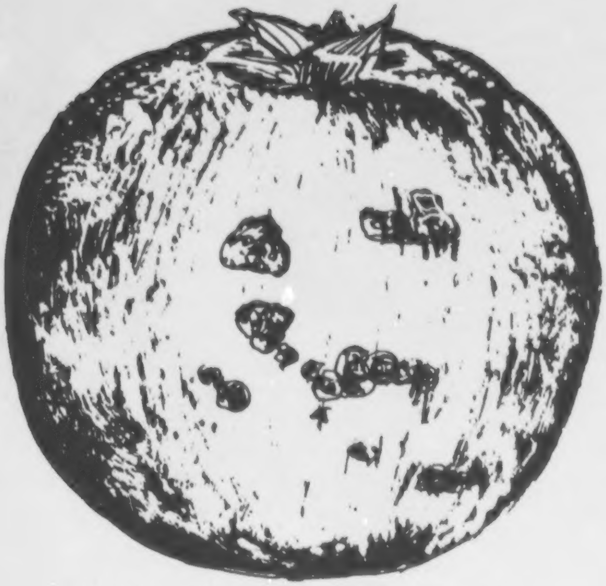
Smut

Bacterial Diseases

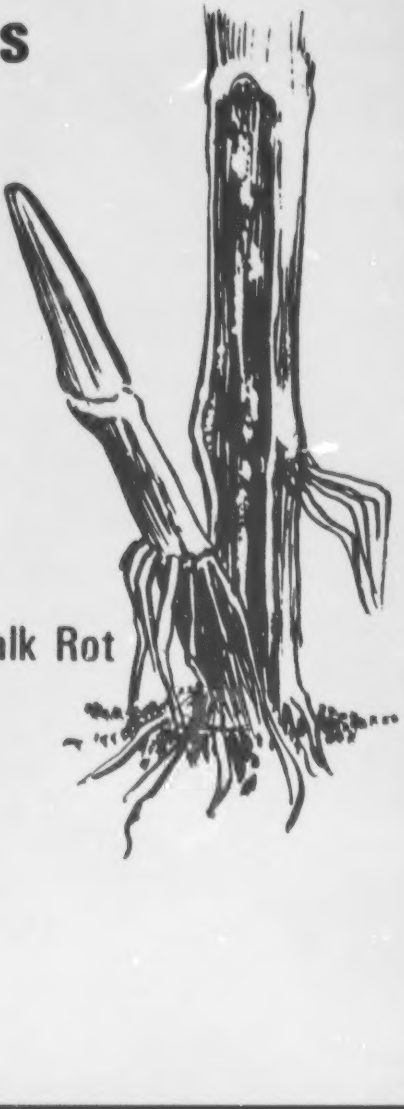


Cotton Leaf Blight

Bacterial Diseases

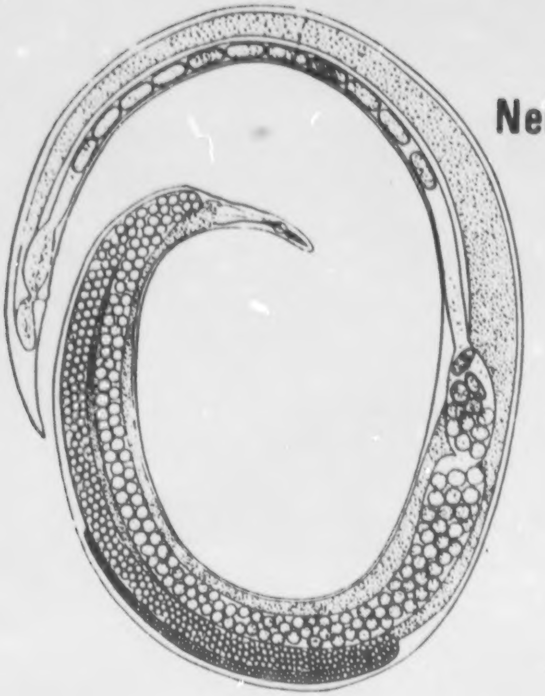


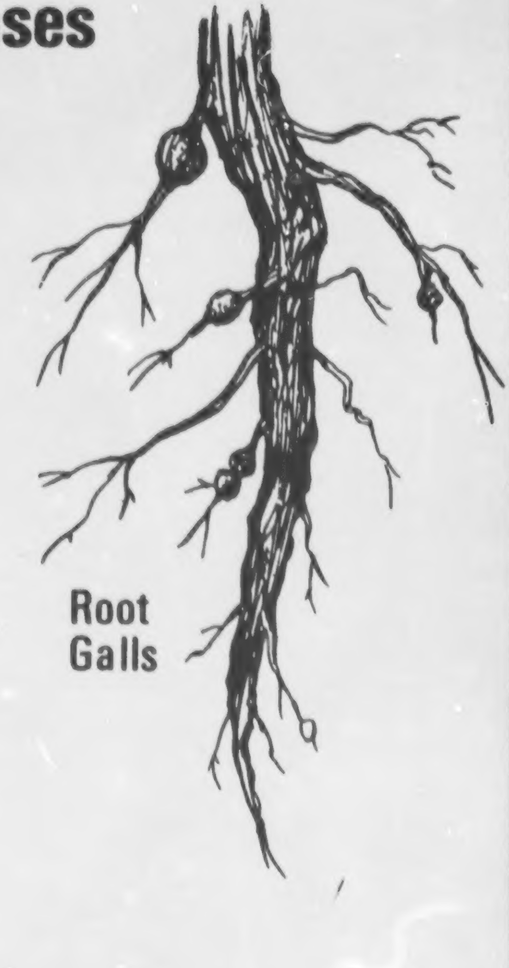
Bacterial Spot on Tomato



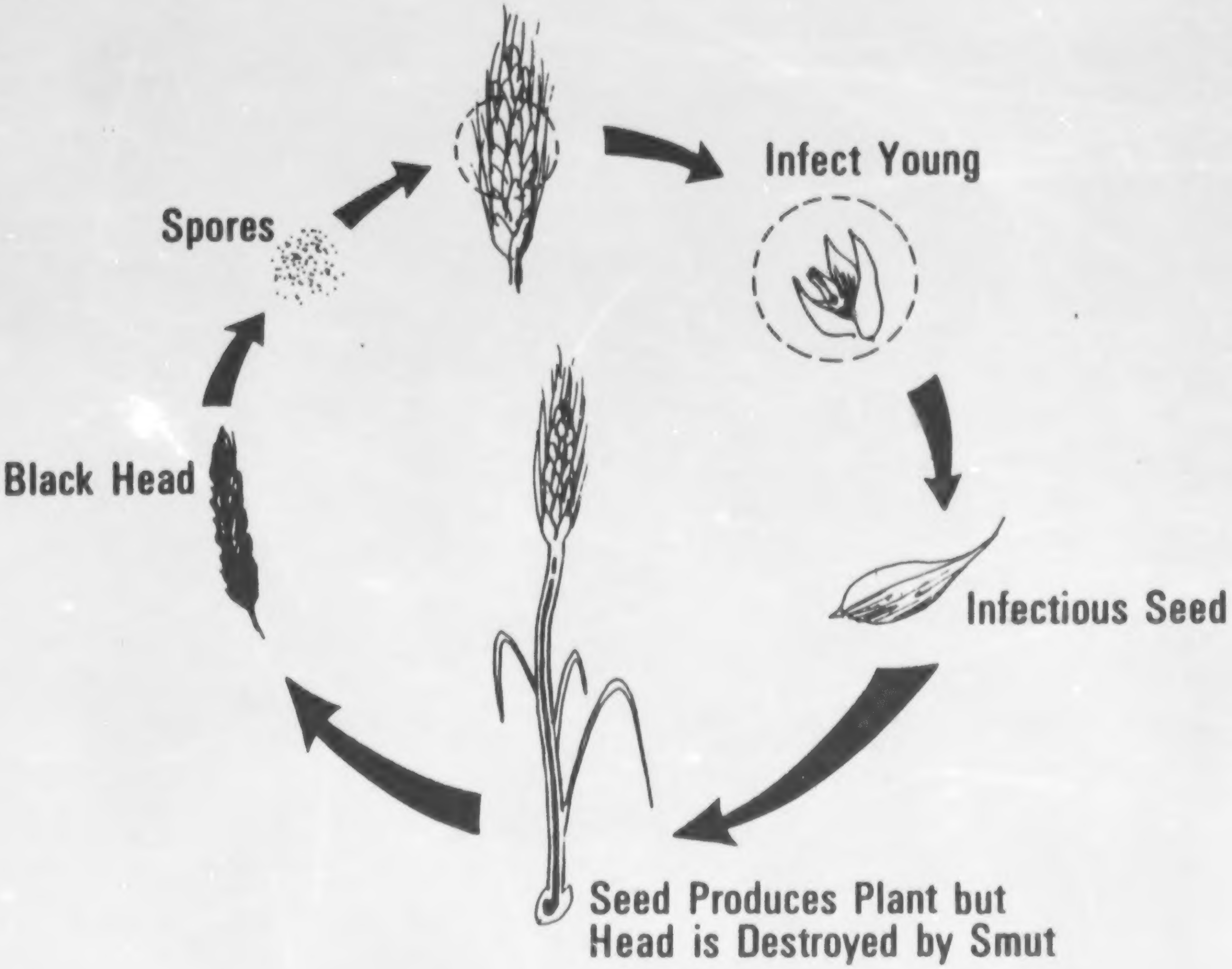
Stalk Rot

Nematode Diseases





Life Cycle of Smuts


Infect Young
Infectious Seed
Seed Produces Plant but
Head is Destroyed by Smut
Black Head
Spores

PLANT DISEASES
UNIT VIII

ASSIGNMENT SHEET #1 - Surveying for Plant Disease Damage

Survey your local community and collect five specimens of plants that are diseased. List the plants below and identify the disease.

Plant	Disease
1.	
2.	
3.	
4.	
5.	

PLANT DISEASES
UNIT VIII

TEST

1. Define the following terms:

   a. Host -

   b. Resistant -

   c. Wilt -

   d. Blight -

   e. Fungicide -

2. Name four ways to control plant diseases.

   a.

   b.

   c.

   d.

3. Arrange the list of diseases below into either a fungus, bacteria, nematode, or virus group. Place an "F" in front of each disease that is considered to be a fungus disease, a "B" in front of the bacteria disease, and "N" in front of the nematode, and a "V" in front of each virus disease.

   a. _____Leaf spot

   b. _____Smut

   c. _____Seedling disease

   d. _____Corn stalk rot

   e. _____Root knot

   f. _____Root rot

   g. _____Blight

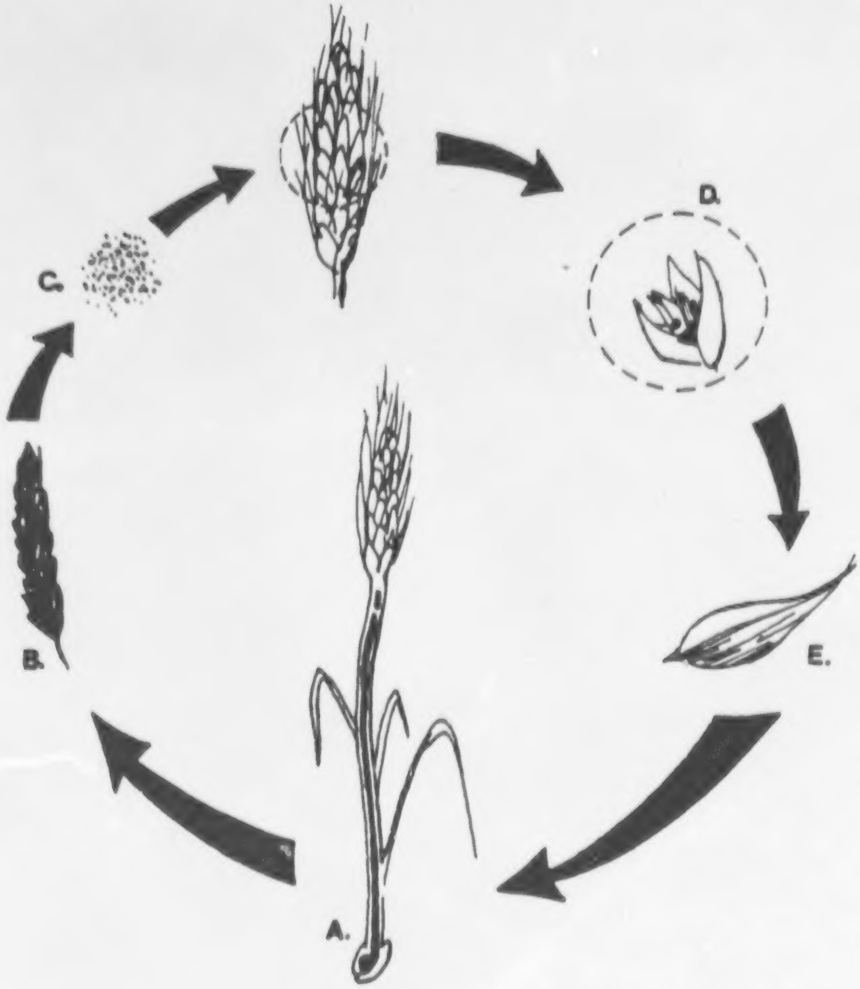
   h. _____Galls

   i. _____Mosaic

   j. _____Wilt

   k. _____Rusts

4. Label the drawing below of the life cycle of smut disease.



a. ____________________

b. ____________________

c. ____________________

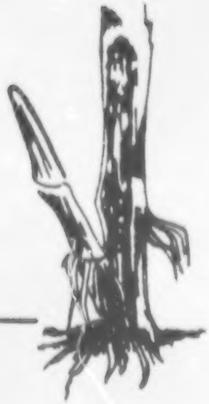
d. ____________________

e. ____________________

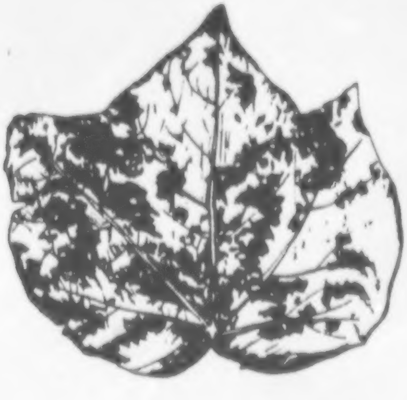
5. Complete the following chart:

Disease	Crops Affected	Symptoms	Control
Smut			
Rust			
Ergot			
Bacterial Blight			
Mosaic			

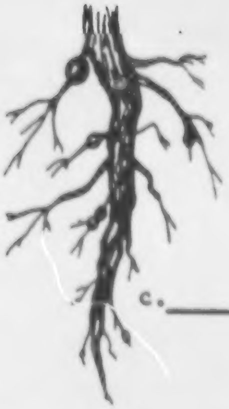
6. Identify the disease causing the damage to the crops shown below.



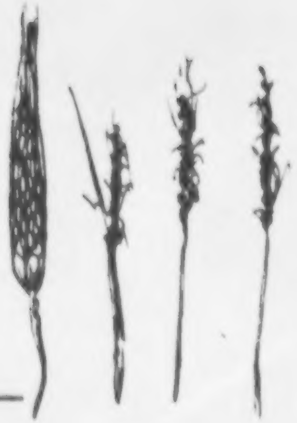
a.____________________



b.____________________________



c.____________________



d.____________________

PLANT DISEASES
UNIT VIII

ANSWERS TO TEST

1. a. Host - The plant in which the disease lives and obtains food
   b. Resistant - The inherited ability of a plant to retard growth of disease organisms
   c. Wilt - The loss of freshness and drooping of leaves
   d. Blight - The rapid discoloration and death of tissue over certain portions of plants
   e. Fungicide - A chemical substance used to kill fungi

2. Any four of the following:
   a. Use of resistant varieties
   b. Eradication of alternate host plant
   c. Treatment of soil
   d. Rotation of crops
   e. Destruction of plant residue
   f. Use of disease-free seed

3. a. B
   c. F
   c. F
   d. B
   e. N
   f. F
   g. B
   h. N
   i. V
   j. B
   k. F

4. a. Seed produces plant but head is destroyed by smut
   b. Black head
   c. Spores
   d. Infect young
   e. Infectious seed

5.

Disease	Crops Affected	Symptoms	Control
Smut	Corn, Sorghum, Oats, Barley, Rye, Wheat	Grayish-white galls on any part of plant filled with mass of black spores at maturity	Crop rotation; use resistant hybrids; treat seeds
Rust	Wheat, Oats, Barley, Rye, Grasses	Long brick-red pustules on stems and leaf sheaths; later turn black	Use resistant varieties and early-maturing varieties
Ergot	Barley, Wheat, Rye	A blue-black, hard mass replaces the kernels in the head of the plant	Rotation; sow disease-free seed
Bacterial blight	Soybeans, Sorghum, Corn	Light to dark-brown irregular spots without marginal halo on leaves, stems, and pods	Destroy crop residue; seed treatment; use resistant varieties
Mosaic	Alfalfa, Soybeans	Plants may dwarf, vein yellowing with dwarfing of stems	Good insect control

6. a. Stalk rot
   b. Cotton leaf blight
   c. Root galls
   d. Smut

SOIL SAMPLING
UNIT III

TERMINAL OBJECTIVES

After completion of this unit, the student should be able to demonstrate the proper procedure for obtaining a representative soil sample from a given field and prepare this sample for mailing and or processing. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with soil testing with the proper definition.
2. Explain in writing reasons for testing soil.
3. Select from a list major items for which soils are tested.
4. Select the procedure for collecting representative soil samples from a given field.
5. Select from a list areas from which soil samples should not be taken.
6. Name items of information that should be submitted with soil samples, in order for proper fertilizer recommendations to be made.
7. Identify four tools used in collecting soil samples.
8. Name two locations in Kansas where soil samples can be sent for testing.
9. Demonstrate the ability to secure a soil sample and prepare it for mailing or processing.

SOIL SAMPLING
UNIT III

SUGGESTED ACTIVITIES

Instructor:

1. Provide students with objective sheet
2. Provide students with information and assignment sheets
3. Make transparencies
4. Discuss terminal and specific objectives
5. Discuss information and assignment sheets
6. Conduct field trip to perform the steps of soil sampling
7. Give test

Students:

1. Read objective sheet
2. Study information sheet
3. Complete assignment sheets
4. Participate in field trip to perform the steps of soil sampling
5. Take test

INSTRUCTIONAL MATERIALS

Included in this unit:

1. Objectives
2. Information sheet
3. Transparency masters

   TM 1--Dividing a Field to be Sampled
   TM 2--How To Take A Soil Sample & Fill Out Information Sheet
   TM 3--Soil Sample Container
   TM 4--Soil Sample Information
   TM 5--Tools Used In Collecting Samples
   TM 6--Using Sampling Tools
4. Assignment sheets

   #1--Selecting Sampling Sites
   #2--Securing a Soil Sample
5. Answers to assignment sheets

6. Test
7. Answers to test

References:

1. Soils, Publication AP-8. Blacksburg, Virginia: Agri-Education, College of Education, Virginia Polytechnic Institute and State University, 1972.
2. "Testing Soil for Fertilizer Needs," OSU Extension Fact Sheet No. 2207 Stillwater, Oklahoma: Extension Service, Oklahoma State University.
3 "Test for Available Nitrogen" Kansas State University Extension, L-275, Manhattan, Kansas, 66502.
4. "Lime and Fertilizer Recommendations, Kansas State University Extension, C-352, Manhattan, Kansas, 66502.
5. "Zinc and Iron Deficiency in Field Crops," L0360, Kansas State University Extension, Manhattan, Kansas, 66502.
6. How To Take A Soil Sample, National Plant Food Institute, 1600 K Street, N.W. Washington 6, D.C.

SOIL SAMPLING
UNIT III

INFORMATION SHEET

I. Terms and definitions

   A. Fertilizer--Any natural or manufactured material added to the soil in order to supply one or more plant nutrients.

   B. Fertilizer analysis--Refers to the minimum percentage of nitrogen, available phosphorus, and water soluble potash in a fertilizer

   C. Soil pH--Refers to the degree of acidity or alkalinity of a soil

   (NOTE: "pH" is an abbreviation for "potential hydrogen"; used chemically to express the hydrogen ion concentration of a solution.)

   D. Alkaline soils--Soils having a pH reading of above 7.0

   E. Acidic soils--Soils having a pH reading less that 7.0

   (NOTE: Each pH unit below 7.0 indicates an increase in acidity of ten times over the preceeding pH value. Each unit above 7.0 indicates ten times increase in alkalinity.)

   F. Organic matter--That fraction of soil which results from decomposition of vegetable and animal matter through the action of bacteria

   (NOTE: The nitrogen in soil is largely stored in the organic matter.)

   G. Soil Test--A chemical means of determining the nutrient supplying power of a soil

II. Reasons for soil testing

   A. Estimates how much a particular nutrient the soil will provide to a crop

   B. Determines the balance of available plant food nutrients

   C. Measures the degree of soil acidity and soil alkalinity

III. Major items for which soils are tested

   A. Phosphorus

   B. Potassium

   C. Nitrogen

   (NOTE: The test is often for organic matter since nitrogen is almost in direct proportion to organic matter.)

D. Calcium

E. Magnesium

F. Hydrogen ion concentration--pH test

IV. Procedure for collecting representative soil samples for a given field (Transparencies 1-4)

A. Divide fields to be sampled into uniform areas of not more than ten acres

(NOTE: Uniform areas may be divided into forty acres.)

B. Samples should be taken from plow depth in cropland and from the top two or three inches in pasture land

C. Samples of uniform size should be put in a bucket and mixed

(NOTE: If tests are to be made for micronutrients use only a clean plastic bucket.)

D. Approximately five to ten samples should be taken in each field or area

E. Approximately one pint of the mixed soil should be placed in a suitable container

(NOTE: A small plastic bag is ideal.)

V. Areas from which soil samples should not be taken

A. Eroded spots

B. Areas with visible differences in soils

C. Small areas of noticeable differences in crop growth with field

D. Back furrows

E. Small depressions

F. Areas in field that have been manured, limed, or otherwise treated differently

G. Fence rows

H. Road beds

VI. Information submitted with sample (Supplemental Information Sheet)

A. Name of county

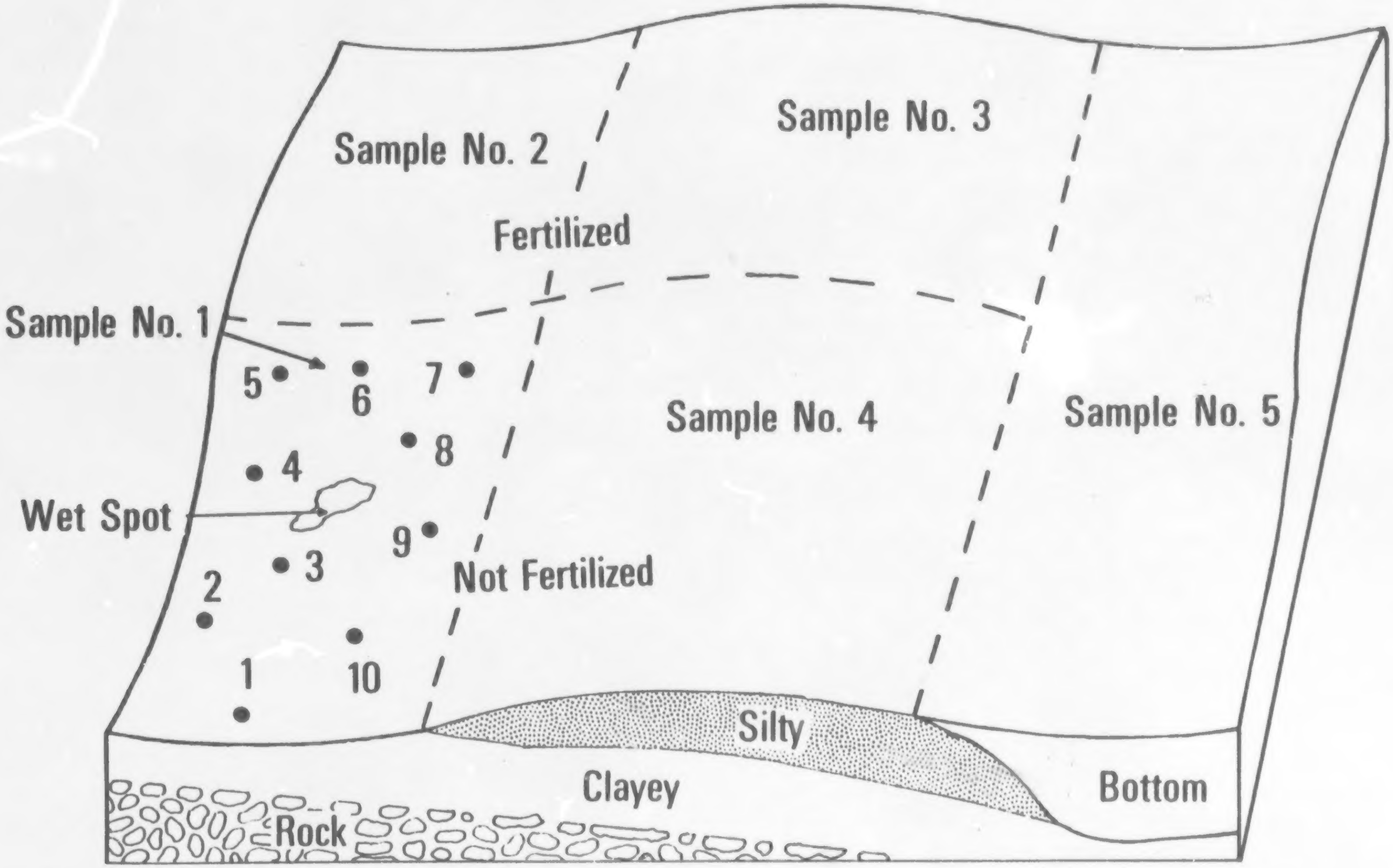
B. Name and address of farmer

C. Size and location of field
D. Fertilizer history
E. Cropping history
F. Crop to be grown
G. Expected yield

VII. Tools used in collecting samples (Transparencies 5 and 6)
A. Soil probe
B. Spade
C. Trowel
D. Soil auger

VIII. Location where soil samples can be sent for testing
A. County Ag Extension Agent
B. Agronomy Department, Kansas State University, Manhattan, Kansas
C. Local Fertilizer Distributor

Dividing a Field to be Sampled


Sample No. 2
Sample No. 3
Fertilized
Sample No. 1
5
6
7
8
4
Wet Spot
9
3
2
1
10
Sample No. 4
Sample No. 5
Not Fertilized
Silty
Clayey
Bottom
Rock

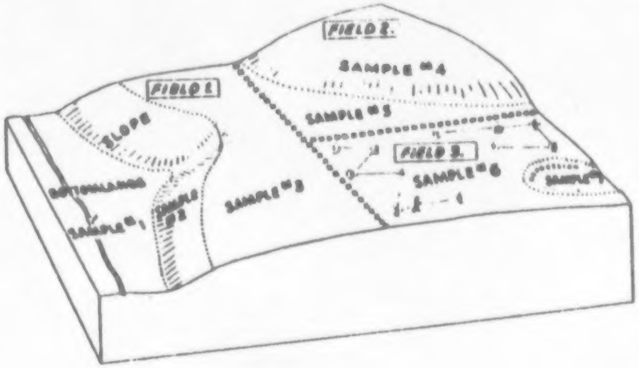
KANSAS STATE UNIVERSITY SOIL TESTING LABORATORY

HOW TO TAKE A SOIL SAMPLE

Test results can be no better than the sample collected in the field. Proper collection of soil samples is extremely important. Follow these steps to obtain a good sample:

1. To take the sample, you will need a sampling tube, auger or spade, and a clean pail. You also need soil sample containers and field information forms which may be obtained from your local county agent or fertilizer dealer.

2. Draw a map of the area to be sampled on the information sheet and divide your fields into uniform areas. Each area should have the same soil texture, color, slope, and previous fertilization and cropping history.



3. From each area, take a sample consisting of 20 to 30 cores or slices, mix thoroughly in a clean container, and then fill your soil sample container from this mixture. All row crops should be sampled to tillage depth and all permanent sod to 4 inches. If the available nitrogen test is desired, a sample to at least 24 inches is necessary. **Caution:** For the zinc test collect soil samples in a plastic container to avoid contamination from galvanized buckets or material made of rubber.

4. Avoid sampling in old fence rows, dead furrows, low spots, feeding areas, and other areas that might give misleading results. If information is desired on these unusual areas, obtain a separate sample from the area.

5. Be sure to label the soil container plainly and record the numbers on the soil container on the information sheet.

6. Repeat the sampling procedure outlined on each area you want tested.

7. Air drying of the samples as soon as possible is necessary for the available nitrogen test. Air drying before shipment is desirable, but not essential for all other tests. **Do not use heat for drying.**

HOW TO FILL OUT INFORMATION SHEET

1. Fill in completely the general information section at the top.

2. Fill in as completely as possible the rest of the information. This is necessary before accurate lime and fertilizer recommendations can be given.

NOTE: These points are particularly critical. Be sure to . . .

- Indicate which tests are desired (see test description on reverse side).
- Indicate the intended crop and the following crop so that recommendations can be made for 2 years.
- Note any special conditions that might exist in the space for remarks so that the person making the recommendation may more fully visualize the conditions on your individual field.

HOW TO SHIP SAMPLES TO SOIL TESTING LAB

1. Take the samples to your local county extension office and they will forward them to the lab. Samples may be sent directly to the lab by placing in a shipping container or wrapping in heavy paper. Place the information sheet and remittance in a stamped envelope and attach it to the outside of package. Write your name and address in the upper left corner. Label shipping container "First Class Mail Enclosed." Tie securely.

2. Mail package to:

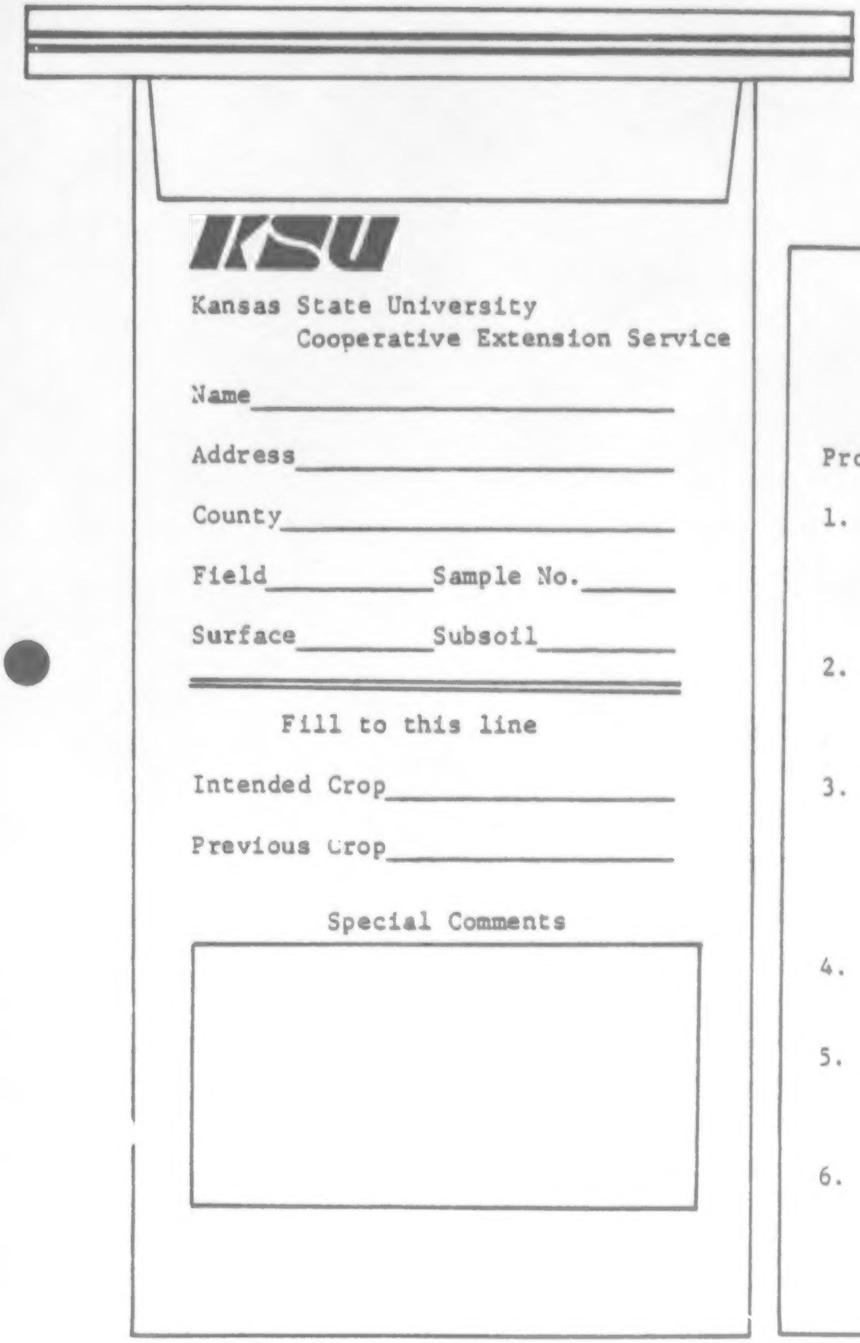
Soil Testing Laboratory
Agronomy Department
Kansas State University
Manhattan, Kansas 66506

or

Soil Testing Laboratory
Garden City Branch
Experiment Station
Garden City, Kansas 67846

3. Enclose check or money order payable to the Soil Testing Laboratory for all services requested. The sender pays the postage. Please do not send cash. We will not be responsible for cash sent through the mail.

SOIL SAMPLE CONTAINER



KSU

Kansas State University
Cooperative Extension Service

Name______________________

Address______________________

County______________________

Field__________ Sample No.______

Surface________ Subsoil________

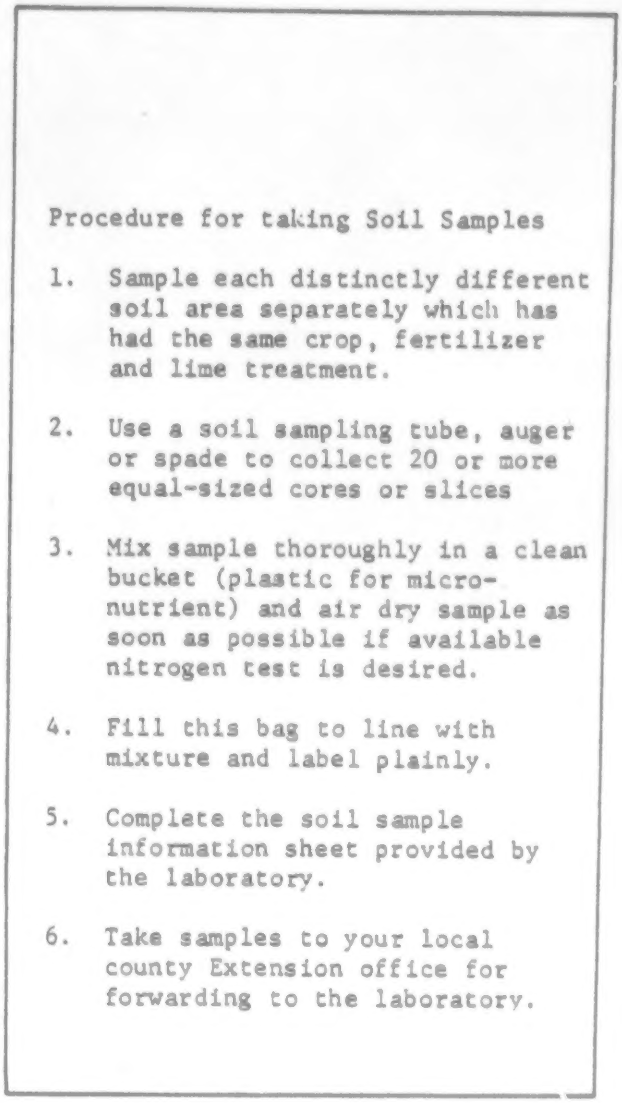
Fill to this line

Intended Crop__________________

Previous Crop__________________

Special Comments

FRONT



Procedure for taking Soil Samples

1. Sample each distinctly different soil area separately which has had the same crop, fertilizer and lime treatment.
2. Use a soil sampling tube, auger or spade to collect 20 or more equal-sized cores or slices
3. Mix sample thoroughly in a clean bucket (plastic for micronutrient) and air dry sample as soon as possible if available nitrogen test is desired.
4. Fill this bag to line with mixture and label plainly.
5. Complete the soil sample information sheet provided by the laboratory.
6. Take samples to your local county Extension office for forwarding to the laboratory.

BACK

Soil Sample Information

SOIL TESTING LABORATORY
Agronomy Department
Kansas State University
Manhattan, Kansas 66506

and

SOIL TESTING LABORATORY
Garden City Branch Expt. Sta.
Kansas State University
Garden City, Kansas 67846

Name: ____________________

Address: ____________________
(Street or Route)

____
(City and State) Zip Code

County: ____________________

Legal Description: ____________________

Date: ____________ 19____

Sample(s) Submitted by: (If different than name at left)

Name: ____________________

Address: ____________________
(Street or Route)

____
(City and State) Zip Code

Fee Payment: Enclosed $________ Account No. ________

For Laboratory Use Only

Fee Payment: ____________________

Date Received: ____________ 19____

Date Results Reported: ____________ 19____

SAMPLE IDENTIFICATION					SOIL DESCRIPTION			IRRIGATION		PREVIOUS TREATMENTS							TEST DESIRED (√) Refer to Fee Schedule					
					Slope	Drainage	Soil Type	Type	Leveling	Last Year					Lime							
Laboratory Number (Do not write below)	Field Number or Letter	Sample Number or Letter	Depth i.e. 0-6" 0-24" 6-24"	Acres Repre-sented by Sample	L-level G-gentle S-steep I-Irregular	P-poor G-good E-excessive	i.e. Geary Silt Loam	Sprinkler Surface	None Moderate Severe	Nitrogen (N) lbs./A.	Phosphate (P_2O_5) lbs./A.	Potash (K_2O) lbs./A.	Zinc (Zn) lbs./A.	Manure or Other Nutrients T./A. or lbs./A.	Last Three Years	Rate E.C.C. lbs./A.	General Fertility	Available Nitrogen	Available Zinc	Available Iron	Combi. Avail. Zinc & Iron	Organic Matter
															19___							
															19___							
															19___							
															19___							

MAP OF SAMPLE LOCATION ON FARM

		CROP HISTORY				DESIRED RECOMMENDATION			REMARKS
		Last Year		Two Years Ago					Note any special conditions of the soil or crops.
Field Number or Letter	Sample Number or Letter	Crop	Yield bu./A. or T./A.	Crop	Yield bu./A. or T./A.	Crop to be Fertilized	Yield Goal bu./A. or T./A.	Crop Next Year	

DO NOT DETACH

RETURN ALL 4 PARTS. THE ORIGINAL WILL BE RETURNED TO YOU.

TM 4

SUPPLEMENTAL INFORMATION SHEET

SOIL TESTS AVAILABLE

The various tests available from the soil testing laboratories are described briefly below. Read through the description of each test and mark on the information sheet which tests you desire on your samples.

Routine Fertility

This test is recommended where crops grow normally, but you desire to know the amount of lime, if any, and the kind and amount of fertilizer needed for optimum plant growth. The test includes determinations for pH, lime requirement on those samples with a pH of 6.4 or less, available phosphorus and exchangeable potassium.

The results of the general fertility test may be supplemented by one or more of the tests listed below. On a majority of the soils in Kansas, this test will be adequate.

Available Profile Nitrogen

This test is recommended on areas which are suspected of having appreciable accumulations of inorganic nitrogen (nitrates plus ammonium). Continuous heavy applications of commercial nitrogen fertilizer and/or heavy rates of manure may give accumulations of available nitrogen where yields have not been high proportional to the nitrogen applied. Under summer fallow conditions, appreciable quantities may also accumulate.

Because nitrates are water soluble, movement of the nitrates down in the profile will occur when moisture penetrates into the soil. Thus samples to deeper than tillage depth are necessary for a reliable test. The available nitrogen test should have samples to at least 24 inches. If a routine fertility test is desired in addition to the available profile nitrogen test, then the surface soil sample plus the subsoil sample must be submitted to the lab. If only available nitrogen is desired, then only one sample to a depth of at least 24 inches is necessary. The samples must be air dried as soon as possible to stop microbial activity. This means spreading the sample on a clean sheet of paper or plastic to dry before sending the sample to the laboratory.

Caution: Be sure the sample is not contaminated by fertilizer dust, manure, salt, etc. Samples should be dry within 24 hours.

Available Zinc

This test is recommended on areas under high yield potential for corn, grain sorghum, or soybeans which by erosion, terracing, or leveling for irrigation have had the topsoil removed. Sandy soils low in organic matter under high yield conditions also should be checked for zinc content. Wheat, alfalfa, and pastures are not likely to respond to zinc so this test is not recommended for these crops.

Available Iron

This test is recommended on the calcareous soils of the western part of the state to determine the likelihood of iron chlorosis on grain sorghum, soybeans, and corn. The test also can be beneficial for selection of shrubs, etc. around homes.

Organic Matter

The organic matter in the soil is the storehouse of most of the nitrogen, sulphur, and several of the micronutrients. Organic matter results can be very meaningful to agronomists in better understanding the soil conditions on your farm. Organic matter levels can be useful in determining rates of herbicides. This test is not recommended on all samples, but only in cases where the additional information is desired.

Other Tests Available

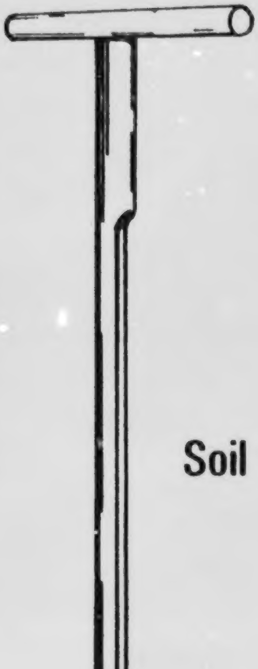
The soil testing laboratories also offer tests for salt alkali, and irrigation water quality. Check with your local county agent on desirability of these tests and instructions for sample collection.

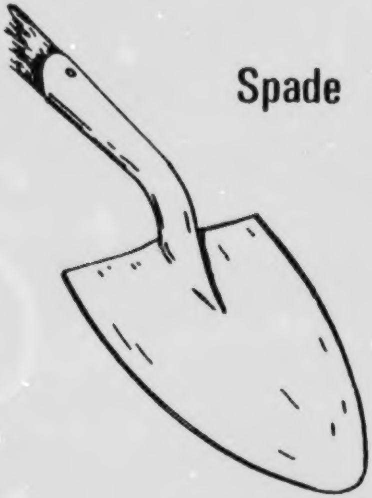
TESTING FEE FOR EACH TEST

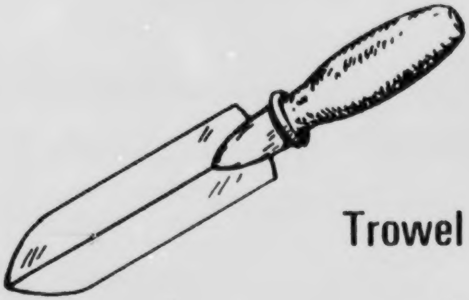
Routine Fertility	$3.00
Available Profile Nitrogen (Per profile)	2.00
Available Zinc	3.00
Available Iron	3.00
Combination Available Zinc and Iron	4.50
Organic Matter	1.00
Salt and Alkali	5.00
Irrigation Water Quality	2.00

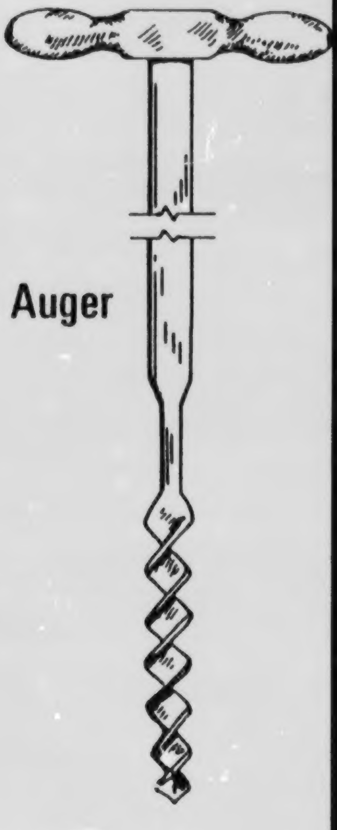
Prices effective January 1, 1976

Tools Used in Collecting Samples

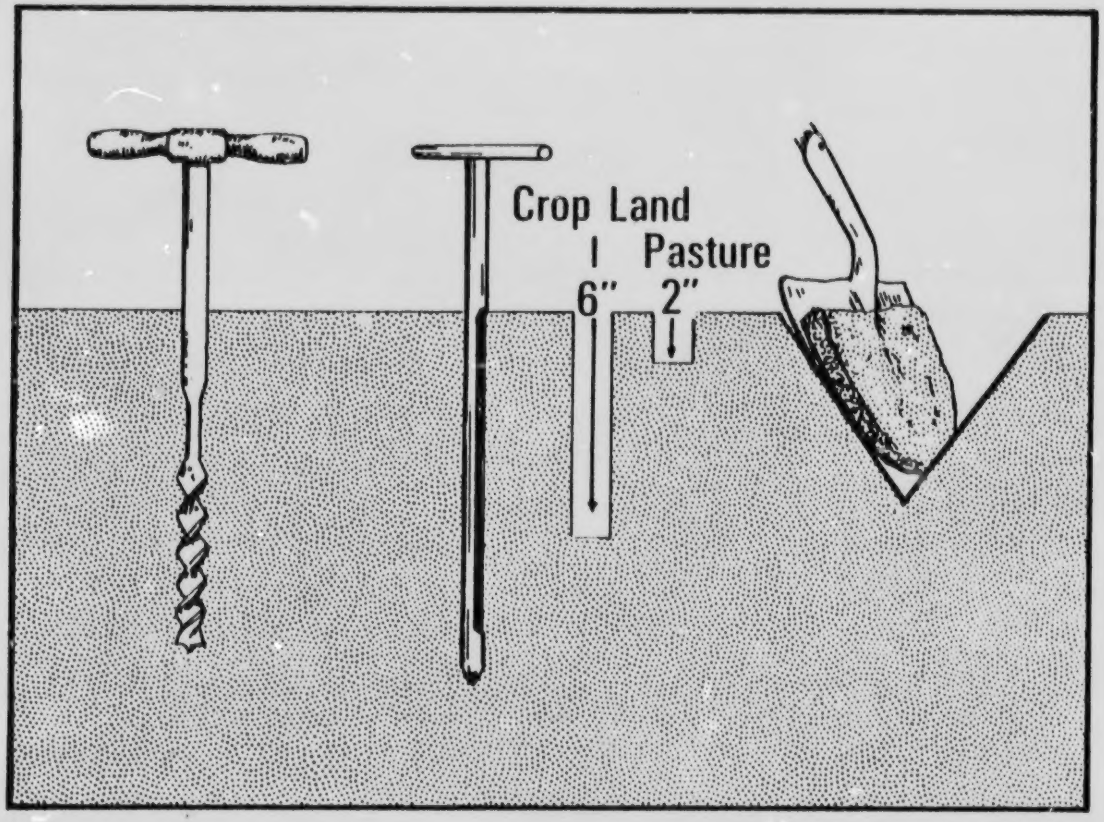

Soil Probe


Spade

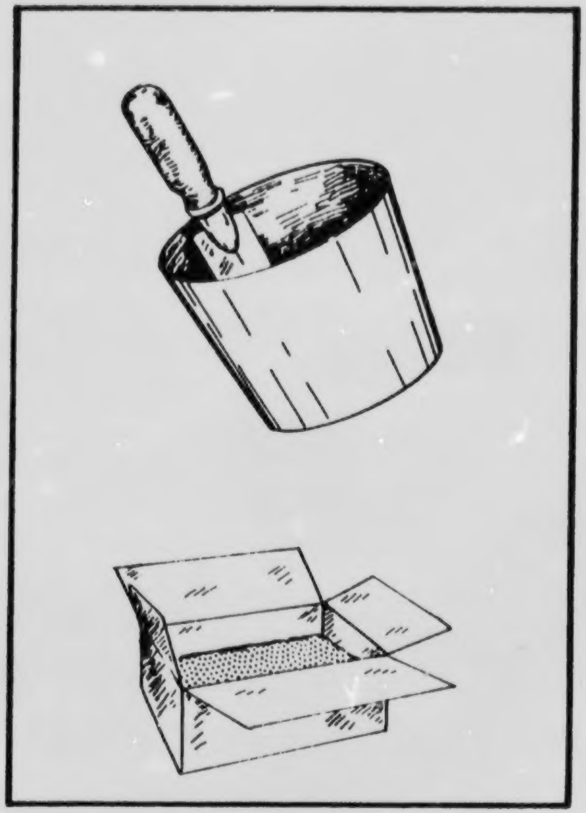

Trowel


Soil Auger

Using Sampling Tools


Crop Land
I
6"
Pasture
2"

Use Proper Sampling Tools



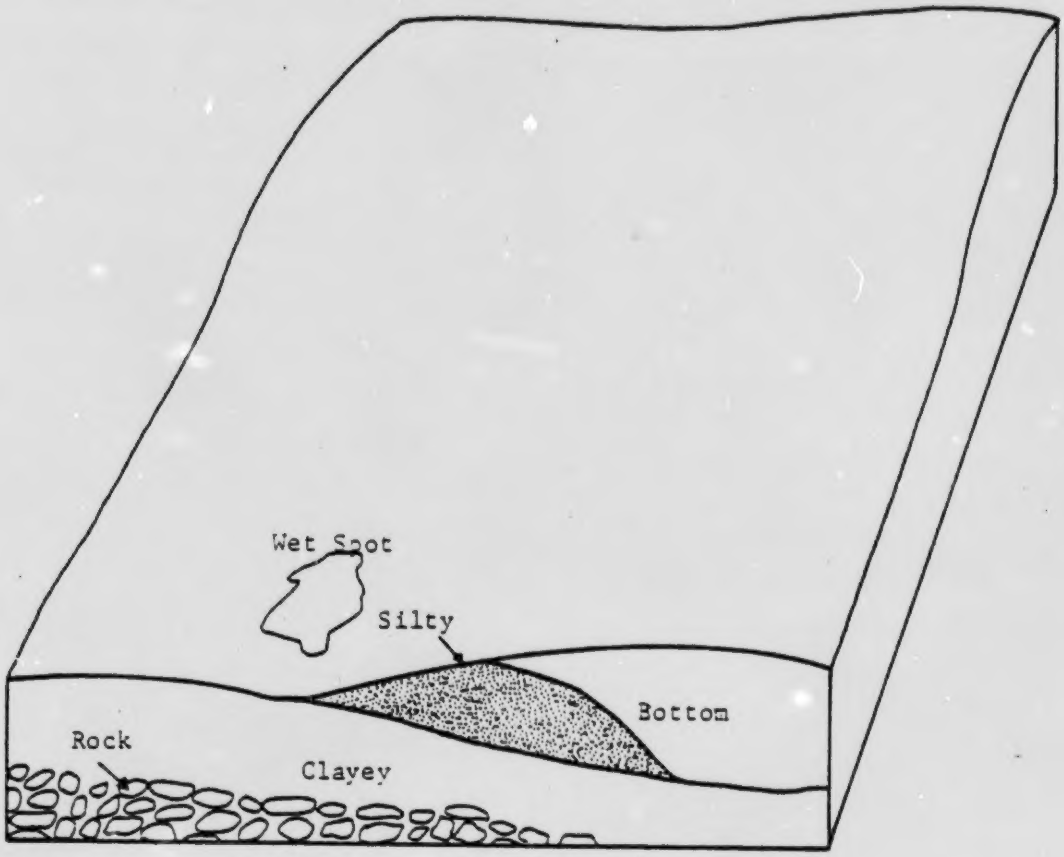
Mix Well in a Clean Pail

SOIL SAMPLING
UNIT III

ASSIGNMENT SHEET #1—SELECTING SAMPLING SITES

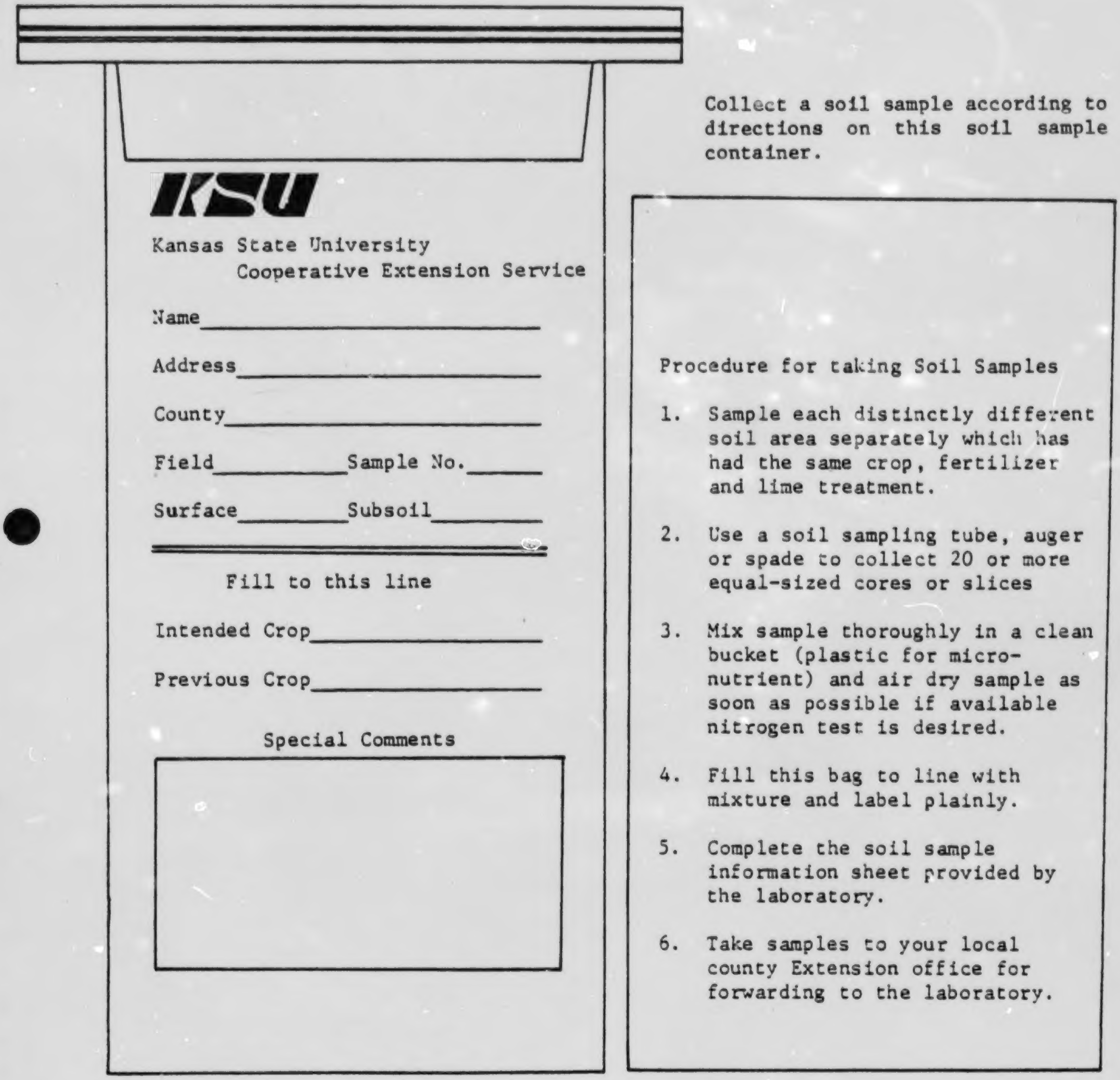
Using the drawing below, complete the following tasks. When completed return to the instructor for his evaluation.

1. Divide a field into sampling areas.
2. Place a small number on each sampling site within one of the divided areas.


Wet Spot
Silty
Bottom
Rock
Clayey

SOIL SAMPLING
UNIT III
ASSIGNMENT SHEET #2
SOIL SAMPLE CONTAINER

Collect a soil sample according to directions on this soil sample container.



KSU

Kansas State University
Cooperative Extension Service

Name ______________________

Address ______________________

County ______________________

Field __________ Sample No. ______

Surface ________ Subsoil ________

Fill to this line

Intended Crop ________________

Previous Crop ________________

Special Comments

Procedure for taking Soil Samples

1. Sample each distinctly different soil area separately which has had the same crop, fertilizer and lime treatment.
2. Use a soil sampling tube, auger or spade to collect 20 or more equal-sized cores or slices
3. Mix sample thoroughly in a clean bucket (plastic for micronutrient) and air dry sample as soon as possible if available nitrogen test is desired.
4. Fill this bag to line with mixture and label plainly.
5. Complete the soil sample information sheet provided by the laboratory.
6. Take samples to your local county Extension office for forwarding to the laboratory.

FRONT

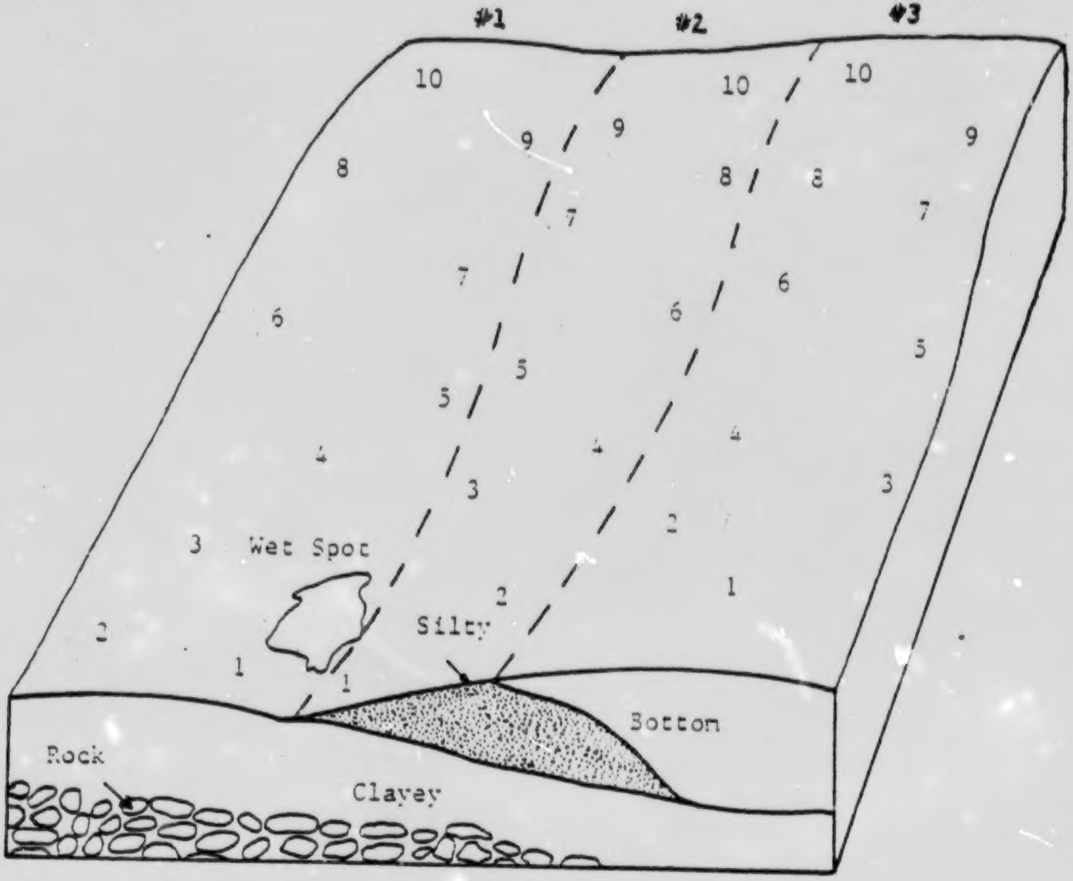
BACK

SOIL SAMPLING
UNIT III

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

Sampling Areas


#1
#2
#3
10
9
8
7
6
5
4
3
2
1
Wet Spot
Silty
Bottom
Rock
Clayey

(NOTE: The student is responsible for only one sampling area. The above sampling sites are only suggested but should be representative of the entire sampling area.)

Assignment Sheet #2--Answers will vary with individual students.

SOIL SAMPLING
UNIT III

TEST

1. Match the terms on the right to the correct definition.

    _____a. Refers to the degree of acidity or alkalinity of a soil

    _____b. Refers to the minimum percentage of nitrogen, available phosphorus, and water soluble potash in a fertilizer

    _____c. Any natural or manufactured material added to the soil in order to supply one or more plant nutrients

    _____d. Soils having a pH reading of above 7.0

    _____e. A chemical means of determining the nutrient supplying power of a soil

    _____f. Those soils having a pH reading less than 7.0

    _____g. That fraction of soil which results from decomposition of vegetable and animal matter through the action of bacteria

    1. Fertilizer
    2. Soil pH
    3. Organic matter
    4. Soil test
    5. Acidic soils
    6. Alkaline soils
    7. Fertilizer analysis

2. Explain in writing two reasons for testing soil.

    a.

    b.

3. Select from the list below, four major items for which soils are tested. Circle the correct answers.

    a. Nitrogen
    b. Calcium
    c. Zinc
    d. Manganese
    e. Phosphorus
    f. Iron
    g. Potassium

4. Place an "X" in the blank to select the procedure to use for collecting a representative soil sample.

    _____a. Five to ten samples should be taken in each field or area

    _____b. Divide fields to be sampled into uniform areas of not more than sixty acres

    _____c. Samples should be taken from the depth of six to eight inches in cropland and pasture land

    _____d. Samples of uniform size should be placed in a bucket and mixed

    _____e. Approximately one quart of the mixed soil should be placed in a suitable container

5. Select from the list below, areas from which samples should not be taken. Circle the unsuitable sites.

    a. Bottom land

    b. Fence Rows

    c. Pasture land

    d. Upland

    e. Back furrows

    f. Eroded spots

    g. Acid soils

6. Name five items of information that should be submitted with the soil sample, in order to make proper fertilizer recommendations.

    a.

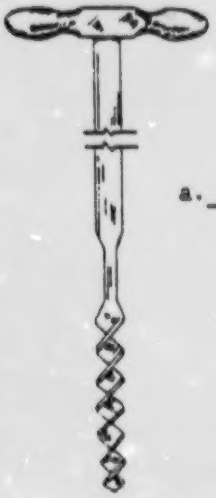
    b.

    c.

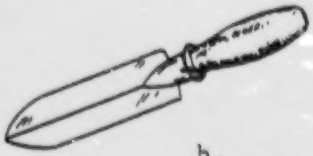
    d.

    e.

7. Identify four sampling tools.

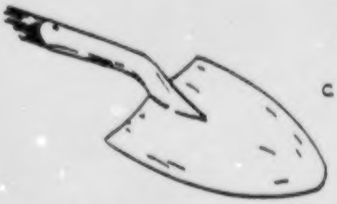


a. ____________________

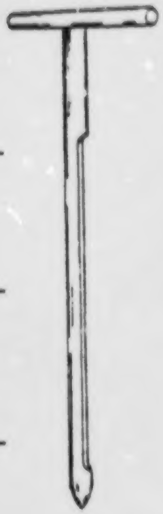


b. ________________

d. ________________



c. ________________



8. Name two locations in Kansas where soil samples can be sent for testing.

9. Demonstrate the ability to secure a soil sample and prepare it for mailing or processing.

SOIL SAMPLING
UNIT III

ANSWERS TO TEST

1. a. 2
   b. 7
   c. 1
   d. 6
   e. 4
   f. 5
   g. 3
2. Any two of the following:
   a. Estimates how much of a particular nutrient the soil will provide to a crop
   b. Determines the balance of available plant food nutrients.
   c. Measures the degree of soil acidity and soil alkalinity.
3. a
   b
   e
   g
4. a
   d
5. b
   e
   f
6. Any five of the following:
   a. Name of county
   b. Name and address of farmer
   c. Size and location of field
   d. Fertilizer history
   e. Cropping history
   f. Crop to be grown
   e. Expected yield

7. a. Soil auger
   b. Trowel
   c. Spade
   d. Soil probe
8. Any two of the following:
   a. County Ag Extension Agent
   b. Agronomy Department, Kansas State University, Manhattan, Kansas
   c. Local Fertilizer Distributor
9. Performance skills will be evaluated to the satisfaccion of the instructor.

LAND PREPARATION
UNIT V

TERMINAL OBJECTIVES

After completion of this unit, the student should be able to recognize different methods and benefits of seedbed preparation. He should be able to recognize and identify various equipment used in land preparation. This knowledge will be evidenced by scoring eighty-five percent on a unit test.

SPECIFIC OBJECTIVES

After completion, the student should be able to:

1. Define four terms associated with land preparation.
2. Name three basic reasons for tillage.
3. Name five characteristics of a good seedbed.
4. Name three factors that determine the time to "till."
5. List the advantages of fall tillage compared to spring tillage.
6. List four advantages of disposing of crop residue.
7. List two advantages of summer fallowing.
8. Write three advantages and three disadvantages of stubble mulching.
9. Recognize and identify equipment used in land preparation.
10. List two advantages of minimum tillage.
11. List three disadvantages of over-tillage.

LAND PREPARATION
UNIT V

SUGGESTED ACTIVITIES

I. Instructor
   A. Provide students with objective sheet
   B. Provide students with information sheet
   C. Make transparencies
   D. Discuss terminal and specific objectives
   E. Discuss information and assignment sheets
   F. Provide students with implement catalogs
   G. Take field trip to machinery dealer
   H. Give test

II. Students
   A. Read objectives
   B. Study information sheet
   C. Complete assignment sheet and turn into instructor
   D. Take test

INSTRUCTIONAL MATERIALS

I. Included in this unit:
   A. Objectives
   B. Information sheet
   C. Assignment sheet #1--Collecting Pictures of Land Preparation
   D. Test
   E. Answers to test

II. References
   A. Crop Production, Harold D. Hughes, Edwin R. Henson, The MacMillan Company, New York, New York.

B. Instructional Materials for Vocational Agriculture I, Teaching Materials Center, Agricultural Education Department, Texas A & M University, College Station, Texas.

C. Experiences with Minimum Tillage, Lowell A. Burchett, Secretary, KCIA, KSU, Manhattan, Kansas.

D. Machinery Booklets from local implement dealer.

LAND PREPARATION
UNIT V

INFORMATION SHEET

I. Terms and definitions

   A. Crop residue - The part of the crop that is left on the ground after harvesting

   B. Stubble mulching - The tillage beneath the stubble without covering all of the residue

   C. Humus - The decomposed plant residue

   D. Erosion - The removal of the topsoil by wind and water

   E. Tillage - A type of cultivation used to maintain a loose soil and eliminate weeds

   F. Pore space - Space between soil particles where soil, water, and nutrients are held

II. Reasons for tillage

   A. Eliminate weeds

   B. Increase soil's chemical and biological conditions for seed germination

   C. Improve physical condition of tight soils

III. Characteristics of a good seedbed

   A. Clean

   B. Firm

   C. Mellow

      1. First two or three inches

      2. Permits better air and water circulation

   D. Free of trash and weeds

   E. Free of disease

   F. Free of insects

IV. Factors determining time to till

   A. Type of crop

   B. Weed problems

C. Erosion
    1. Wind
    2. Water
D. Moisture

V. Advantages of "tillage"
    A. Advantages of fall "tillage"
        1. Increase time for crop residue to decay
        2. Reduce tillage load
        3. Improve chances of forming a firm seedbed
        4. Allow time for soil to crumble from freezing and thawing
        5. Aid in insect control
        6. Reduce work load in spring
    B. Advantages of spring "tillage"
        1. Aid in controlling wind erosion in sandy soil
        2. Add organic matter

VI. Advantages of turning crop residue to the soil
    A. Add organic matter to the soil
    B. Increase food elements
    C. Increase microorganism action
    D. Conserve moisture

VII. Advantages of summer fallowing
    A. Conserve moisture to increase yields
    B. Control weeds

VIII. Advantages and disadvantages of stubble mulching
    A. Advantages of stubble mulching
        1. Reduce erosion
        2. Increase moisture
        3. Increase crop yields

B. Disadvantages of stubble mulching

   1. Provides habitat for overwintering disease organisms

   2. Provides habitat for overwintering insects

   3. May require alterations in planting equipment and techniques

IX. Land preparation equipment (See Supplemental Information)

   A. One-way plow

   B. Subsurface tiller

   C. Chisel plow

   D. Moldboard plow-roll over

   E. Spike tooth harrow

   F. Land roller

   G. Spring tooth harrow

   H. Tandem disk

   I. Off-set disk

   J. Field cultivator

X. Advantages of minimum tillage

   A. Flexibility in planting date and soil moisture conditions

   B. Soil tilth is improved

   C. Water run - off and soil erosion in reduced

   D. Machinery, fuel energy, power and labor requirements are reduced

IX. Disadvantages of overtillage

   A. Moisture loss

   B. Increased soil erosion

   C. Crusting is increased

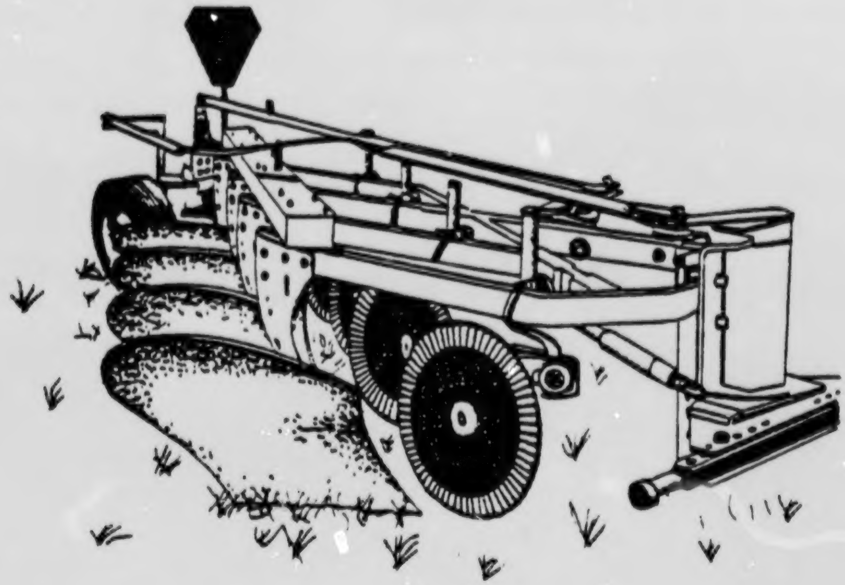
   D. Compaction of subsoil

   E. Assures germination of weed seeds

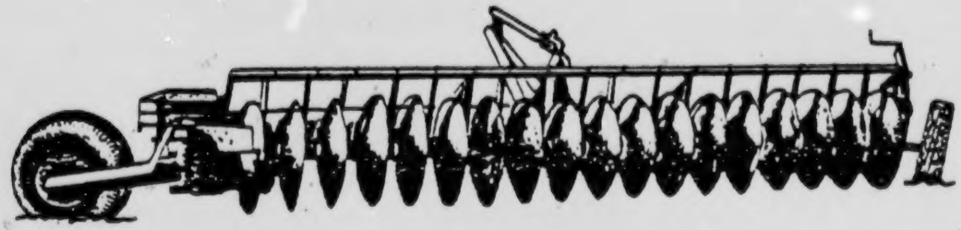
   F. Waste of machinery, labor and fuel

SUPPLEMENTAL INFORMATION

Moldboard Plow

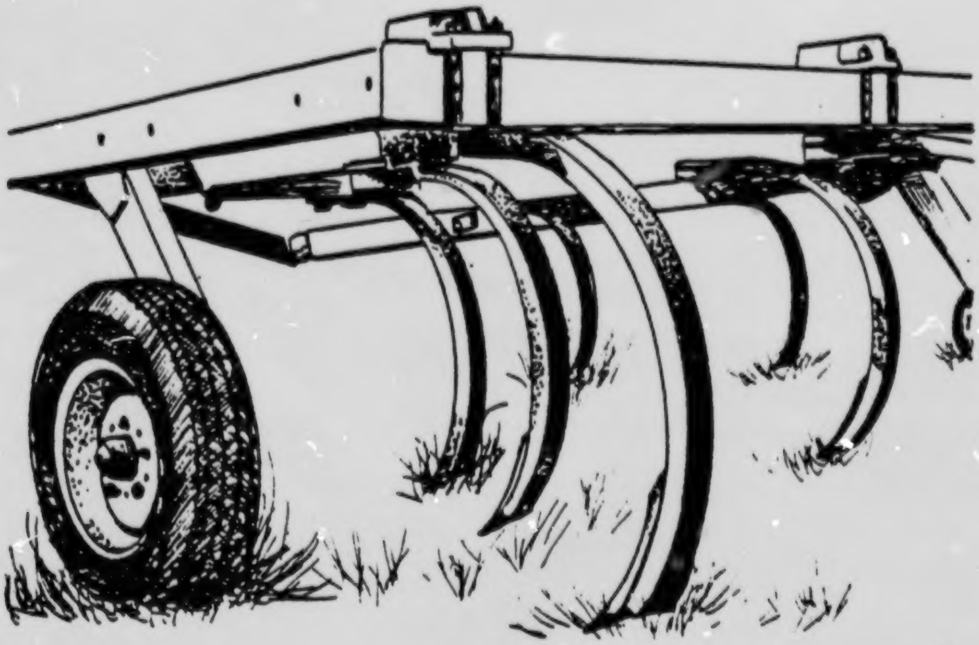


Disk Plow

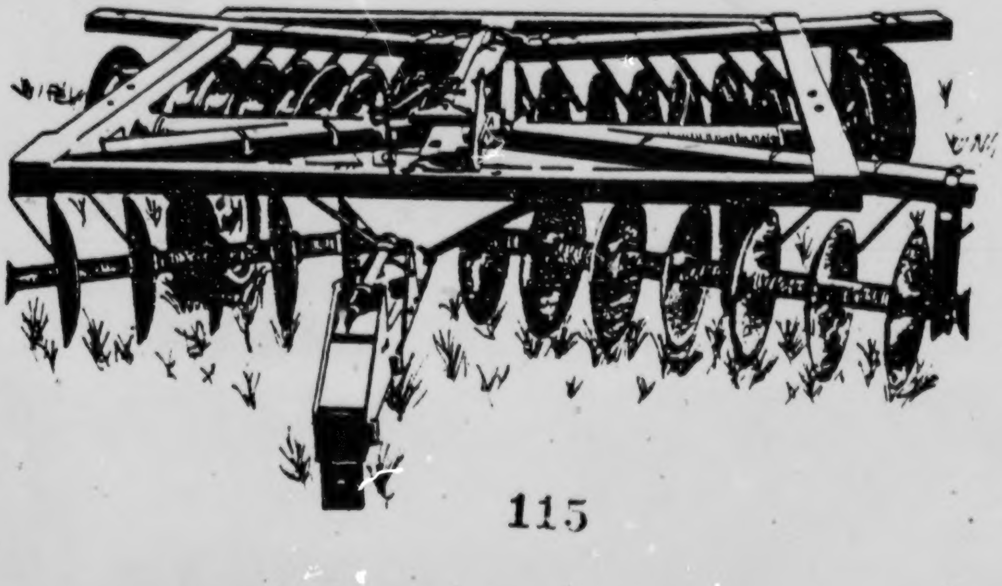


SUPPLEMENTAL INFORMATION

Chisel Plow

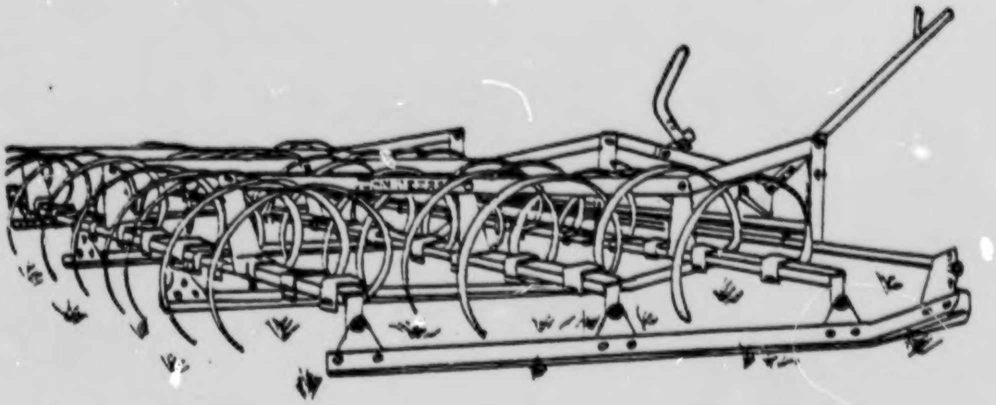


Tandem Disk

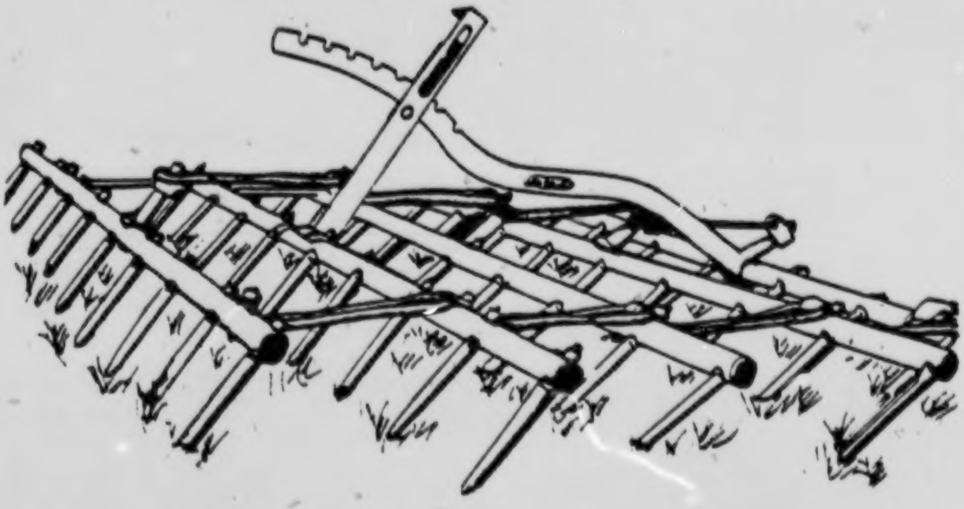


SUPPLEMENTAL INFORMATION

Spring Tooth Harrow



Spike Tooth Harrow



LAND PREPARATION
UNIT V

ASSIGNMENT SHEET #1--COLLECTING PICTURES OF LAND PREPARATION EQUIPMENT

Collect ten pictures of land preparation equipment of those types used in your local community, and explain how the equipment is used in tillage operation.

LAND PREPARATION
UNIT V

TEST

1. Define the following terms:
    - a. Humus -
    - b. Stubble mulching -
    - c. Crop residue -
    - d. Erosion -

2. What are the three basic reasons for tillage?
    - a.
    - b.
    - c.

3. List five characteristics of a good seedbed.
    - a.
    - b.
    - c.
    - d.
    - e.

4. Name three factors that help in determining the time to "till."
    - a.
    - b.
    - c.

5. List two advantages of fall tillage as compared with spring tillage.
    - a.
    - b.

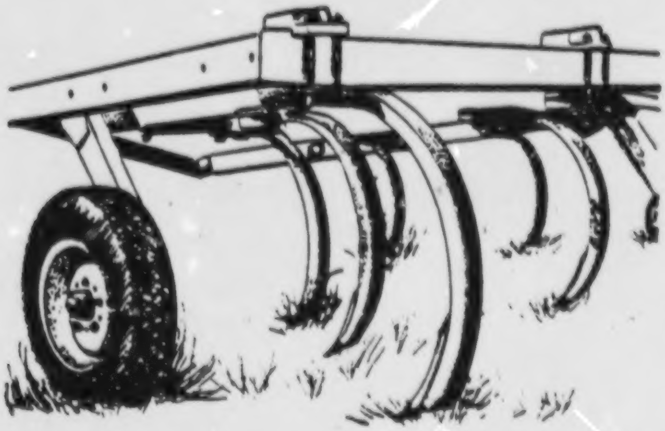
6. Name four advantages of returning crop residue to the soil.
   - a.
   - b.
   - c.
   - d.

7. What are two advantages of summer fallowing?
   - a.
   - b.

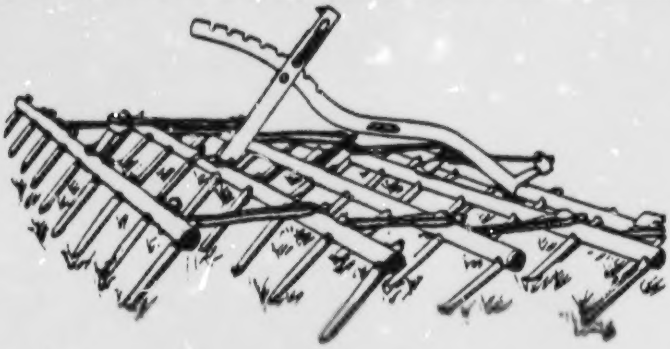
8. A. List three advantages of stubble mulching.
      1.
      2.
      3.

   B. What are two advantages of stuble mulching?
      1.
      2.

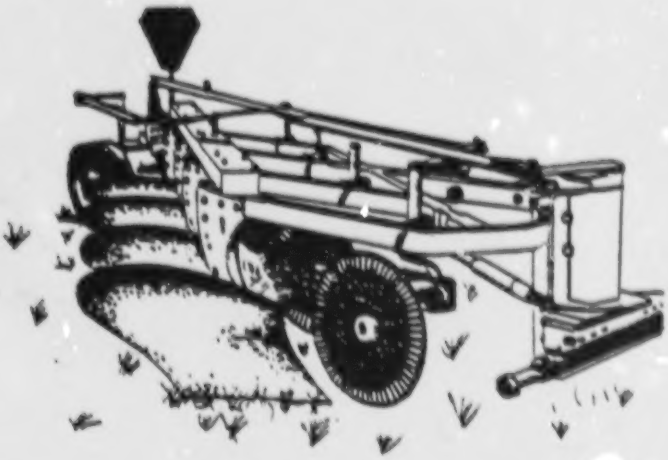
9. Identify the following tools used in land preparation.



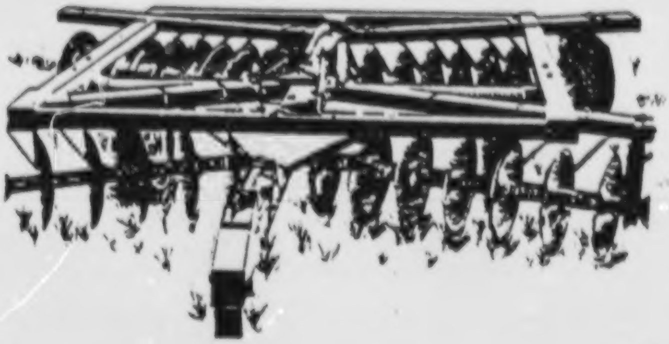
a. ______________________________



b. ______________________



c. ______________________



d. ______________________

10. Name two advantages of minimum tillage.

    a.

    b.

11. List three disadvantages of overtillage.

    a.

    b.

    c.

LAND PREPARATION
UNIT V

ANSWERS TO TEST

1. a. Humus - Decomposed plant residue
   b. Stubble mulching - The tillage beneath the stubble without covering all of the residue
   c. Crop residue - The part of the crop that is left on the ground after harvesting
   d. Erosion - The removal of the topsoil by wind and water

2. a. Eliminate weeds
   b. Increase soil's chemical and biological condition
   c. Improve physical condition of tight soils

3. Any five of the following:
   a. Clean
   b. Firm
   c. Mellow
   d. Free of trash and weeds
   e. Free of disease
   f. Free of insects

4. a. Types of crop
   b. Weed problem
   c. Erosion

5. Any two of the following:
   a. Increase time for crop residues to decay
   b. Reduce tillage load
   c. Improve chances of forming a firm seedbed

6. Any four of the following:
    a. Add organic matter to the soil
    b. Increase food elements
    c. Increase microorganism action
    d. Reduce erosion
    e. Maintain air circulation and controls temperature

7. a. Conserve moisture
    b. Control weeds

8. A. 1. Reduce erosion
        2. Increase moisture intake
        3. Increase crop yields
    B. Any two of the following:
        1. Provides habitat for overwintering disease organisms
        2. Provides habitat for overwintering insects
        3. May require alterations in planting equipment and techniques

9. a. Chisel plow
    b. Spike-tooth harrow
    c. Moldboard plow
    d. Tandem disk

10. Any two of the following:
    a. Flexibility in planting date and soil moisture conditions
    b. Soil tilth is improved
    c. Water run-off and soil erosion is reduced
    d. Machinery, power and labor requirements are reduced

11. Any three of the following:
    a. Moisture loss
    b Increases soil erosion
    c. Crusting is increased
    d. Compaction of subsoil
    e. Assures germination of weed seeds
    f. Waste of machinery, labor, and fuel

SOIL CONSERVATION SERVICE AND CONSERVATION DISTRICTS
UNIT V

TERMINAL OBJECTIVES

After completion of this unit, the student should be able to match terms associated with Conservation Districts and the Soil Conservation Service and distinguish between the responsibilities of a Conservation District and the Soil Conservation Service. He should be able to select from a list the assignments made to the Soil Conservation Service by Congress and the Secretary of Agriculture. The student should be able to select from a list the occupational opportunities available in the Soil Conservation Service and explain in writing how the student trainee program works. This knowledge will be evidenced by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with Conservation Districts and Soil Conservation Service.
2. Distinguish between the responsibilities of a Conservation District and the Soil Conservation Service.
3. Explain in writing how Conservation Districts are organized and managed.
4. Identify the six conservation areas within the state of Kansas.
5. Select from a list the assignments made to the Soil Conservation Service by Congress and the Secretary of Agriculture.
6. List the benefits that land users derive from the Soil Conservation Service.
7. Select from a list the occupational opportunities available in the Soil Conservation Service.
8. Explain in writing how the Soil Conservation Service Student Trainee Program works.
9. Complete a survey indicating the names of district directors and types of services available through the Soil Conservation Service and Conservation Districts.

SOIL CONSERVATION SERVICE AND CONSERVATION DISTRICTS
UNIT V

SUGGESTED ACTIVITIES

I. Instructor:

  A. Provide students with objective sheet.
  B. Provide students with information and assignment sheets.
  C. Make transparencies.
  D. Discuss terminal and specific objectives.
  E. Discuss information and assignment sheets.
  F. Arrange for a Soil Conservation Service employee to visit class and explain present work plans for district.
  G. Contact local Conservation District or Soil Conservation Service and secure a resource conservation plan.
  H. Give test.

II. Students:

  A. Read objectives.
  B. Study information sheet.
  C. Complete assignment sheet and turn in to instructor.
  D. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

  A. Objectives
  B. Information sheet
  C. Transparency masters
    1. TM 1 - Organizational Chart
    2. TM 2 - Kansas Conservation Areas and Districts
  D. Assignment sheet
    1. Assignment Sheet #1 - How the Soil Conservation Service and Conservation District Serve My Family
  E. Test
  F. Answers to test

II. References:

A. Assistance available from the Soil Conservation Service, USDA Bulletin No. 345, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, 1970.

B. Careers in Soil Conservation Service. USDA Miscellaneous Publication No. 717. Washington, D.C.: U.S. Government Printing Office, 1971.

C. Students, Start Your Career in Soil Conservation Service Before Graduate. USDA Publication No. 714, Washington, D.C.: U.S. Government Printing Office, 1966.

SOIL CONSERVATION SERVICE AND CONSERVATION DISTRICTS
UNIT V

INFORMATION SHEET

I. Terms and definitions

  A. Conservation District - A legal subdivision of the state, organized under the Conservation District Law enacted in 1937 and as later amended

  (NOTE: Conservation Districts are responsible for carrying out a program of conservation of our natural resources of lands within the district boundaries.)

  B. Soil Conservation Service - Agency of the U.S. Department of Agriculture which is one of the principle sources of federal government assistance to Conservation Districts

  (NOTE: By the will of Congress and by direction of the Secretary of Agriculture, the primary function of the Soil Conservation Service is to give technical help--through districts--to individuals, groups, and communities who make decisions about the conservation development and use of natural resources.)

  C. Long-range program - Program that identifies present and future needs and opportunities for the conservation and development of natural resources within the district

  D. Annual work plan - Outlines the current year's steps to be taken toward the goals and objectives of the long range plan

  (NOTE: This is the district's plan and not that of the Soil Conservation Service or any other public agency. Once developed the district work plan makes it possible for the Soil Conservation Service to develop its own annual plan of operations and thus properly plan for its assistance to the district.)

II. Conservation District and Soil Conservation Service responsibilities

  A. Conservation District

    1. Furnishing effective local leadership in the form of a properly constituted governing body

    2. Holding regular and special meetings to plan work and to determine community needs for conservation and resource development

    3. Developing a long-range program that recognizes the interests of all the people in the district and is compatible with the area or regional development plans

    4. Developing, with help from the Soil Conservation Service and other agencies, an annual work plan related to the long-range program which states what will be needed to reach objectives and accomplish work scheduled for the year ahead

    5. Enlisting needed assistance from whatever source is available

6. Coordinating the several conservation and resource development programs which may operate within the district

7. Determining priorities for Soil Conservation Service and other assistance to individuals, public bodies, private organizations, and other district cooperators

8. Supervising employees of the district

9. Managing all funds, facilities, and equipment belonging to the district; Soil Conservation Service employees will not engage in these activities

10. Cooperating with other districts and governmental units in multi-district resource activities such as comprehensive and functional planning, watershed development, river basin programs, and other resource development projects

11. Correlation of district programs with those of other agencies engaged in resource planning and development such as planning commissions, economic development districts, sanitary commissions, conservation commissions, and others

12. Reporting to the public on resource conservation needs and progress and the work of the district

13. Following up with cooperators to insure effectiveness of the program

B. Soil Conservation Service

1. Furnishing qualified technical help, as available, on the basis of needs outlined by the district

2. Locating its staff, insofar as possible, at headquarters mutually satisfactory to the district and Soil Conservation Service and providing such facilities as its employees may require

3. Gathering and providing soil survey, water management, and other resource data and interpretations, for use by the district and others in making plans and decisions

4. Developing a workload analysis for an annual plan of operations for its own staff, after review of the district annual work plan

5. Keeping the district governing body informed about Soil Conservation Service work in the district and any new developments that would affect the district program or alter the assistance available from the Soil Conservation Service

6. Supervising and managing Soil Conservation Service personnel, equipment, and facilities made available to the district by Soil Conservation Service

7. Cooperating with other resource agencies assisting the district

8. Assisting the district with information and education activities in the community, area, and state

9. Helping the district meet demands from local governments and others seeking technical help on land use and related resource needs and opportunities

   (NOTE: The Conservation Districts and Soil Conservation Service work together as partners--each looks to the others for assistance and guidance in meeting the needs in soil, water, and related resource conservation and in providing effective technical assistance to landowners and operators who make the final decisions on land use and conservation treatment to be applied.)

III. Organization and management of Conservation Districts (Transparency 1)

   A. Districts are organized under state law by local people

   B. Districts are managed by an elected and unsalaried board made up of local citizens

   C. Each district is legally responsible under state law for soil and water conservation work within its boundaries

   (NOTE: Districts operate under the guidance of a state commission, board or committee elected by the district supervisors.)

IV. Conservation Areas and Districts (Transparency 2)

   A. Conservation Areas

      1. State is divided into(6) areas for the purpose of selecting the members to the State Conservation Commission.

      2. The commission's goal is to assist the conservation districts in the promotion, development, and administration of conservation programs in Kansas.

      3. The state Conservation Commission members are elected by supervisors from the (5) Conservation Districts for two year terms.

   B. Conservation Districts

      1. State is divided into (5) districts for the purpose of establishing programs and plans of work, based on conservation needs and problems.

      2. Districts request and receive technical assistance from the Soil Conservation Service in carrying out their program.

      3. Each district is governed by a five man board of supervisors, three are elected by land occupiers of the district and two are appointed by the State Conservation Commission.

V. Soil Conservation Service assignments from Congress and Secretary of Agriculture

   A. Develops and carries out a national soil and water conservation program through conservation districts

B. Helps develop and carry out watershed protection and flood prevention projects

C. Administers the Great Plans Conservation Program

D. Helps local sponsors develop and carry out multicounty resource conservation and development projects

E. Has primary responsibility for the national cooperative soil survey

F. Heads the National Inventory of Soil and Water Conservation Needs Committee

G. Makes and coordinates snow surveys for water forecasting in the West

H. Helps establish income-producing recreation areas on privately owned land and public recreation areas

I. Gives technical assistance to land users participating in the conservation-credit program of the Farmers Home Administration

J. Gives technical assistance to all land owners including non-farming and urban groups

VI. How Soil Conservation Service benefits land users

A. Develops a soil and land-capability map of the land unit, a range-site and range-condition map of rangeland, and a woodland-suitability map of woodlands

B. Compiles information about the different uses and adaptation of crops (including grasses, trees, and wildlife) for each kind of soil

C. Assembles information about conservation measures needed on each kind of soil for each of the different safe uses

D. Gives onsite assistance to the individual in making a conservation plan for his land unit

E. Gives technical assistance in designing, laying out, and checking the construction and maintenance of dams, terraces, or other structures

F. Gives technical assistance in selecting plant varieties, seeding methods and rates, and in solving problems that arise in managing pastures, woodlands, or wildlife habitat

G. Services are extended to nonfarm rural land users as well as to urban land users

VII. Occupational opportunities of the Soil Conservation Service

A. Conservation technician

(NOTE: Helps professional conservationists prepare conservation farm plans. Helps land users establish measures called for in conservation plans.)

Qualifications - Experience in conservation farming; farm or ranch background required for most positions. Vocational agriculture training will normally be sufficient for the qualifications.

B. Engineering technician

(NOTE: Helps engineers with surveys, plotting notes, engineering computations, drafting, layout work in the field, and inspection of construction operations.)

Qualifications - Experience on survey crews running levels and transits; work on construction, layout, and inspection. Vocational Agricultural training is highly desirable.

C. Soil Conservationist

(NOTE: Helps local people in rural and rural-fringe areas prepare conservation development plans for communities and individual operating units to meet local needs. Gives onsite technical assistance in carrying out planned conservation improvements.)

Qualifications - A college degree with major study in soil conservation or a closely related natural resource or agricultural field. Specified courses are listed in the examination announcement.)

D. Soil Scientist

(NOTE: Collects information about the soil through examination and records the information on maps and as field notes which are published later. Presents the information for use by farmers and ranchers, urban planners, and technical specialists in other fields.)

Qualifications - A college degree with major study in soil science or closely related field of study. Specified courses are listed in the examination announcement.)

E. Engineer

(NOTE: Plans, designs, and supervises construction of: earth fill and reinforced-concrete dams for flood prevention, water supply, wildlife, and water-based recreation; streambank-protection and channel-stabilization work; chutes, drops, spillways, diversions, waterways, and terraces for erosion control and water conservation; and irrigation and drainage systems. Makes hydrologic studies and prepares oil mechanics reports on foundation and earth embankment materials.)

Qualifications - College degree in engineering with major emphasis on hydraulics, hydrology, structural design, drainage, or irrigation.)

F. Range conservationist

(NOTE: Helps ranchers and other range users to determine the potential of their land for producing forage from native plant communities for livestock, wildlife, and recreation and to prepare conservation plans to improve the condition of their range. Gives onsite technical assistance in range inventories, proper forage utilization, reseeding, brush control, water development, systems of grazing, and ecosystem management.

Qualifications - College degree with major study in range management or range conservation. Specified courses are listed in the examination announcement.)

G. Economist

(NOTE: Participates in planning watersheds, river basins, and resource conservation and development areas. Estimates benefits, allocates costs, and determines economic justification of plans for flood prevention, irrigation, drainage, municipal and industrial water supply, recreation, and other types of resource development projects. Collects and analyzes data on economic growth indicators and uses economic projections in evaluating water and related land resource planning. Collects cost-and-return data for conservation measures.

Qualifications - A college degree with major study in economics. Specified courses are listed in the examination announcement.)

H. Woodland conservationist

(NOTE: Gives technical guidance, training, and other assistance in woodland conservation to Soil Conservation Service employees and soil and water conservation district cooperators. Develops specifications for woodland practices in collaboration with forestry agencies. Soil Conservation Service employees use this information in providing assistance to land users in conserving their woodlands as part of coordinated soil and water conservation programs. Interprets forestry techniques and experimental data for field use. Helps to evaluate soil-tree relationships and determine woodland conservation practices in relation to specific soil or site conditions.

Qualifications - A college degree with major study in forestry. Specified courses are listed in the examination announcement.)

I. Agronomist

(NOTE: Provides technical guidance on agronomic problems to Soil Conservation Service employees, and to land owners and operators who are carrying out soil and crop experimental data for field use of Soil Conservation Service personnel, and to land owners and operators who are planning and applying conservation plans. Conducts field trials to evaluate adaptability and handling of grasses and legumes useful in soil and water conservation. Determines methods of establishing herbaceous vegetation for soil and water conservation purposes.

Qualifications - A college degree with major study in agronomy or a closely related field. Specified courses are listed in the examination announcement.)

J. Biologist

(NOTE: Provides guidance and training to Soil Conservation Service employees in biological principles and practices that make cropland, grazing land, woodland, and farm or ranch water more productive of fish and wildlife. Develops biological practices and standards, converts new knowledge into technical recommendations, and assembles and makes available other information relating to fish and wildlife for the use of Soil Conservation Service employees and land owners and operators.

Qualifications - A college degree with at least thrity semester hours in biological science. Specified courses are listed in the examination announcement.)

K. Geologist

(NOTE: Investigates and interprets surface and subsurface conditions in relation to: planning, designing, and constructing engineering structures; ground water-supply, management, and recharge; sediment-yield, sources, damage, and control.

Qualifications - A college degree with major in geology. Specified courses are listed in the examination announcement.)

L. Plant materials specialist

(NOTE: Brings together plants from many sources for conservation uses. Tests and evaluates these plants to determine adaptation, erosion control, and soil improving values. Determines the cultural requirements and the management practices necessary for success. Increases and field tests selected plants for such specialized uses as pond margins, ground cover, forage, sand dunes, wind barriers, wildlife food and shelter, and turfs and screens on land used for recreation.

Qualifications - A college degree with a major in agronomy, range conservation, or other plant science.)

VIII. How Soil Conservation Service Student Trainee Program works

A. Program designed for college freshmen, sophomores, or juniors that are majoring in Agriculture

B. Students qualify in a civil service examination

C. The Soil Conservation Service hires student to work during nonschool periods at GS-3 after completing one year in college

D. Student works each summer during the vacation period, goes on leave from the job in the fall, and returns to college

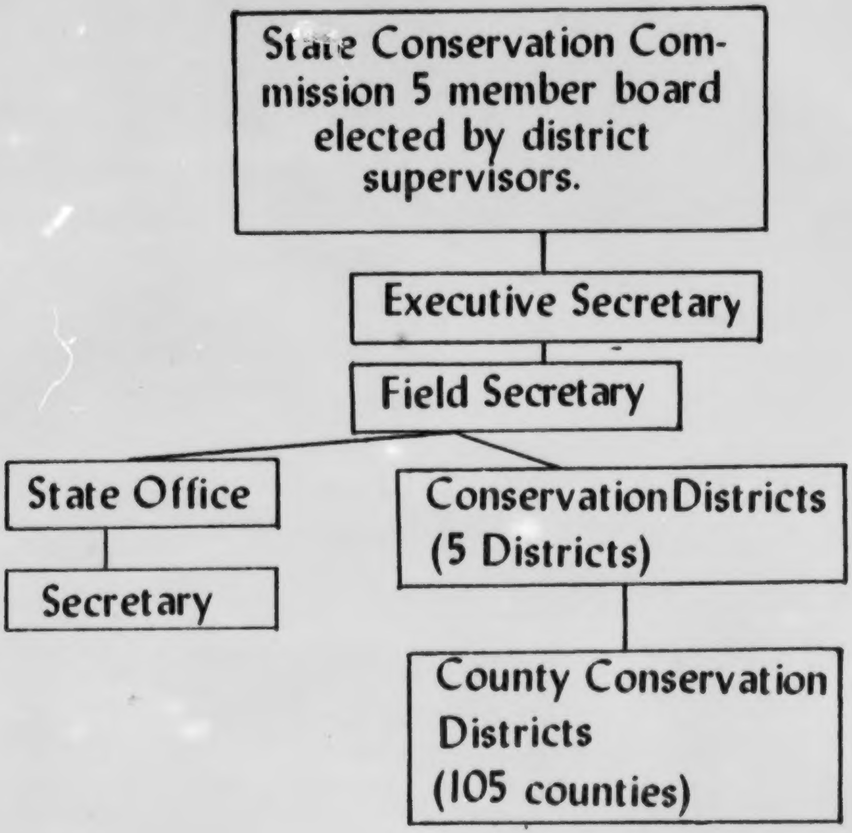
E. Between sophomore and junior year, the student will be eligible for promotion to GS-4

F. Between junior and senior year, student is eligible for promotion to GS-5

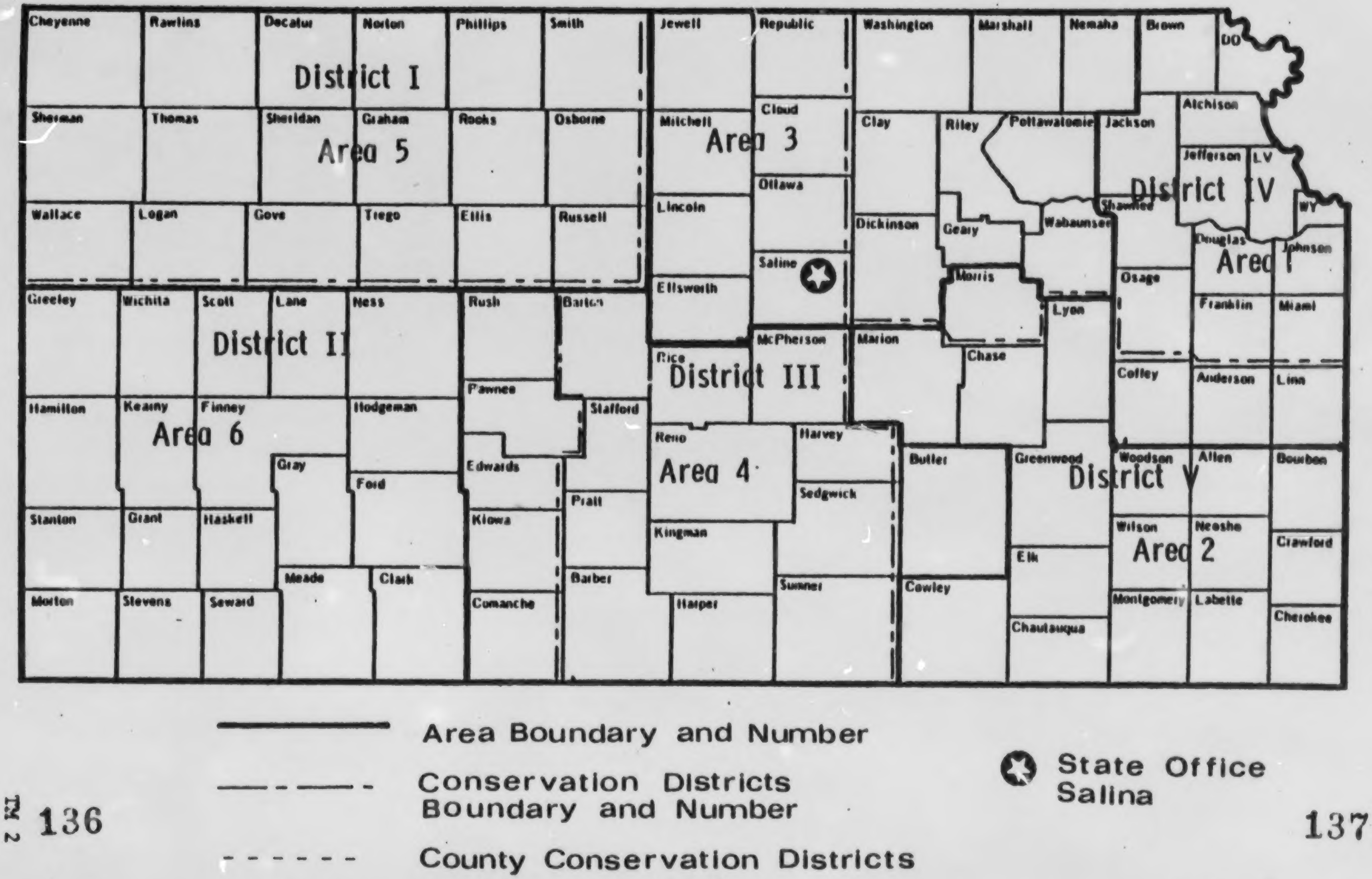
G. Upon successful completion of work assignment and graduation and without further civil service examination, student is assigned to a full-time professional job

(NOTE: Soil Conservation Service offers a student creative, challenging outdoor work, on-the-job training by recognized authorities in the science of soil and water conservation, and an opportunity to gain broad experience in all phases of soil and water conservation or to specialize in one technical field.)

Organizational Chart


State Conservation Commission 5 member board elected by district supervisors.
Executive Secretary
Field Secretary
State Office
Secretary
ConservationDistricts (5 Districts)
County Conservation Districts (105 counties)

KANSAS CONSERVATION AREAS AND DISTRICTS


Cheyenne
Rawlins
Decatur
Norton
Phillips
Smith
Jewell
Republic
Washington
Marshall
Nemaha
Brown
DO
District I
Sherman
Thomas
Sheridan
Graham
Rooks
Osborne
Mitchell
Cloud
Area 3
Clay
Riley
Pottawatomie
Jackson
Atchison
Area 5
Jefferson
LV
District IV
Wallace
Logan
Gove
Trego
Ellis
Russell
Lincoln
Ottawa
Dickinson
Geary
Wabaunsee
Shawnee
WY
Douglas
Johnson
Area 1
Saline
Morris
Osage
Greeley
Wichita
Scott
Lane
Ness
Rush
Barton
Ellsworth
Lyon
Franklin
Miami
District II
McPherson
Marion
Rice
District III
Chase
Coffey
Anderson
Linn
Pawnee
Hamilton
Kearny
Finney
Hodgeman
Stafford
Area 6
Reno
Harvey
Butler
Greenwood
Woodson
Allen
Bourbon
District V
Gray
Edwards
Ford
Area 4
Pratt
Sedgwick
Stanton
Grant
Haskell
Kiowa
Kingman
Wilson
Neosho
Crawford
Area 2
Elk
Meade
Clark
Barber
Sumner
Cowley
Morton
Stevens
Seward
Comanche
Harper
Montgomery
Labette
Cherokee
Chautauqua
Area Boundary and Number
Conservation Districts Boundary and Number
County Conservation Districts
State Office Salina

SOIL CONSERVATION SERVICE AND CONSERVATION DISTRICTS
UNIT V

ASSIGNMENT SHEET #1 - HOW THE SOIL CONSERVATION SERVICE AND CONSERVATION DISTRICT SERVE MY FAMILY

Complete the following survey either by visiting a Soil Conservation Service office or listing a Soil Conservation Service employee that has visited your class.

1. Identify your Conservation District

2. Name the five district directors in your Conservation District and list their occupations

   a.

   b.

   c.

   d.

   e.

3. How has the Soil Conservation Service and the Conservation District served your family in the past?

4. In what ways could the Soil Conservation Service and Conservation District be of service to you and your family in the future.

SOIL CONSERVATION SERVICE AND CONSERVATION DISTRICTS
UNIT V

TEST

1. Match the terms on the right to the proper definition.

_____a. Program that identifies present and future needs and opportunities for the conservation and development of natural resources within the district

_____b. A legal subdivision of the state, organized under the Conservation District Law enacted in 1937 and as later amended

_____c. Agency of the U.S. Department of Agriculture which is one of the principle sources of federal government assistance to Conservation Districts

_____d. Outlines the current year's steps to be taken toward the goals and objectives of the long-range plan

1. Conservation District

2. Soil Conservation Service

3. Long-range program

4. Annual work plan

2. Place "D" by the responsibilities of a Soil Conservation District and "S" by the responsibilities of the Soil Conservation Service.

_____a. Furnishing effective local leadership in the form of a properly constituted governing body

_____b. Developing a workload analysis for an annual plan of operations for its own staff, after review of the district annual work plan

_____c. Gathering and providing soil survey, water management, and other resource data and interpretations for use by the district and others in making plans and decisions

_____d. Developing a long-range program that recognizes the interests of all the people in the district and is compatible with the area or regional development plans

_____e. Cooperating with other districts and governmental units in multi-district resource activities such as comprehensive and functional planning, watershed development, river basin programs, and other resource development, river basin programs, and other resource development projects _____f. Holding regular and special meetings to plan work and to determine community needs for conservation and resource development

_____g. Locating its staff, insofar as possible, at headquarters mutually satisfactory to the district and Soil Conservation Service and providing such facilities as its employees may require

_____h. Following up with cooperators to insure effectiveness of the program

_____i. Supervising and managing Soil Conservation Service personnel, equipment, and facilities made available to the district by Soil Conservation Service

_____j. Assisting the district with information and education activities in the community, area, and state

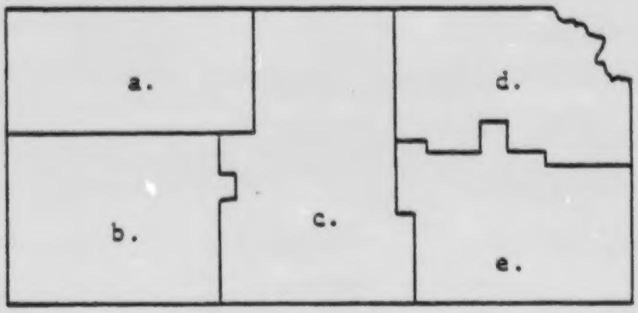
_____k. Reporting to the public on resource conservation needs and progress and the work of the district

_____l. Furnishing qualified technical help, as available, on the basis of needs outlined by the district

3. Explain in writing how Conservation Districts are organized and managed.

4. Identify the five Conservation Districts in Kansas.

a. District #______
b. District #______
c. District #______
d. District #______
e. District #______



5. Select from the list below the assignments made to Soil Conservation Service by Congress and Secretary of Agriculture by the correct functions.

_____a. Helps local sponsors develop and carry out multicounty resource conservation and development projects

_____b. Assists the counties in making soil surveys _____c. Administers the Great Plans Conservation program

_____d. Develops and carries out a county soil and water conservation program through conservation areas

_____e. Heads the National Inventory of Soil and Water Conservation Needs Committee

_____f. Makes and coordinates rainfall and temperature surveys for weather forecasting in the West

_____g. Helps establish income-producing recreation areas on privately owned land and public recreation areas

_____h. Gives technical assistance to all land owners including nonfarming and urban groups

6. List three benefits that land users derive from the Soil Conservation Service.

   a.

   b.

   c.

7. Select from the list below the occupational opportunities available in the Soil Conservation Service. Place an "X" by the correct answers.

_____a. Engineering technician

_____b. Agronomist

_____c. Plant materials specialists

_____d. Entomologist

_____e. Range conservationist

_____f. Conservation technician

_____g. Animal scientist

_____h. Woodland conservationist

_____i. Soil conservationist

8. Explain in writing how the Soil Conservation Service Student Trainee Program works.

9. Complete a survey indicating the names of district directors and types of services available through the Soil Conservation Service and Conservation Districts.

(NOTE: This activity should be completed prior to this test.)

SOIL CONSERVATION SERVICE AND CONSERVATION DISTRICTS
UNIT V

ANSWERS TO TEST

1. a. 3
   b. 1
   c. 2
   d. 4

2. a. D
   b. S
   c. S
   d. D
   e. D
   f. D
   g. S
   h. D
   i. S
   j. S
   k. D
   l. S

3. Conservation districts are organized by local people. They are managed by an elected and unsalaried board made up of local citizens. Each district is legally responsible for soil and water conservation work within its boundaries.

4. a. I
   b. II
   c. III
   d. IV
   e. V

5. a
   c
   e
   g
   h

6. Any three of the following:

   a. Develops a soil and land-capability map of the land unit, a range-site and range-condition map of rangeland, and a woodland-suitability map of woodlands

   b. Compiles information about the different uses and adaptation of crops (including grasses, trees, and wildlife) for each kind of soil

   c. Assembles information about conservation measures needed on each kind of soil for each of the different safe uses

   d. Gives onsite assistance to the individual in making a conservation plan for his land unit

   e. Gives technical assistance in designing, laying out, and checking the construction and maintenance of dams, terraces, or other structures

   f. Gives technical assistance in selecting plant varieties, seeding methods and rates, and in solving problems that arise in managing pastures, woodlands, or wildlife habitat

   g. Services are extended to nonfarm rural land users as well as to urban land users

7. a

   b

   c

   e

   f

   h

   i

8. a. Program designed for college freshmen, sophomores, or juniors that are majoring in Agriculture

   b. Students qualify in a civil service examination

   c. The Soil Conservation Service hires student to work during nonschool periods at GS-3 after completing one year in college

   d. Student works each summer during the vacation period, goes on leave from the job in the fall, and returns to college

   e. Between sophomore and junior year, the student will be eligible for promotion to GS-4

   f. Between junior and senior year, students are eligible for promotion to GS-5

   g. Upon successful completion of work assignment and graduation and without further civil service examination, student is assigned to a full-time professional job

9. Evaluated to the satisfaction of the instructor.

AGRICULTURAL STABILIZATION AND CONSERVATION SERVICE
UNIT VI

TERMINAL OBJECTIVES

After the completion of this unit, the student should be able to match terms associated with the Agricultural Stabilization and Conservation Service, select from a list the farm legislative acts that have been enacted through the years to control production, and explain in writing how the Agricultural Stabilization and Conservation Service is organized on the state and county level. The student should be able to select the primary responsibilities of the Agricultural Stabilization and Conservation Service and list the principal activities of the Agricultural Stabilization and Conservation Service. This knowledge will be evidenced by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms and definitions associated with the ASCS.
2. Select from a list the farm legislative acts that have been enacted through the years to control production.
3. Explain in writing how the ASCS is organized on the state and county level.
4. Select from a list the primary responsibilities of the ASCS.
5. List the principal activities of the ASCS.
6. Complete a form listing facts about the county ASCS office and programs.

AGRICULTURAL STABILIZATION AND CONSERVATION SERVICE
UNIT VI

SUGGESTED ACTIVITIES

I. Instructor:

  A. Provide students with objective sheet.

  B. Provide students with information and assignment sheets.

  C. Discuss terminal and specific objectives.

  D. Discuss information and assignment sheets.

  E. Arrange for a representative from the county ASCS to talk to class

  F. Give test.

II. Students:

  A. Read objectives.

  B. Study information sheet.

  C. Complete assignment sheet and turn in to instructor.

  D. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

  A. Objectives

  B. Information sheet

  C. Assignment sheet

    1. Assignment Sheet #1 - Local Facts About ASCS

  D. Test

  E. Answers to test

II. References:

  A. ASCS Background Information. Production Adjustment Programs. USDA BI No. 5, 1972.

  B. ASCS Background Information, The Agricultural Stabilization and Conservation Service. USDA BI No. 1, June 1972.

  C. ASCS Commodity Fact Sheet, Agricultural Stabilization and Conservation Service, USDA, January 1979.

AGRICULTURAL STABILIZATION AND CONSERVATION SERVICE
UNIT VI

INFORMATION SHEET

I. Terms and definitions

A. Agricultural Conservation Program--Cost-share program designed to assist and encourage landowners to carry out soil and water conservation practices. Objectives of the program are to (1) minimize erosion caused by wind and water, and (2) conserve resources and wildlife.

B. Agricultural Stabilization and Conservation Service--Agency of the U.S. Department of Agriculture that administers specified commodity and related land use programs for voluntary production adjustment, resource protection and price, market and farm income stabilization. Agency was establised June 5, 1961, by direction of the Secretary of Agriculture.

C. Allotment--A national allotment is established annually for program crops (wheat, feed grains and cotton) which represents an estimate of the number of harvested acres of a commodity needed to produce the qunatity necessary to fill domestic and export needs. The national allotment is apportioned to states, counties, and farms on the basis of the acreage planted to the commodity during specified base years.

D. Compliance--Meeting the terms and conditions of a program agreement or contract. Verification of compliance may be made by a visit to the farm by a representative of the landowner on the use being made of cropland on the farm for a specified crop year.

E. Commodity Loan Program--Loan program funded by the Commodity Credit Corporation which makes available to farmers a source of credit using farm-stored or warehouse-stored grain as security for the loan.

F. Conserving Base--The average acreage of cropland on the farm devoted in 1959 and 1970 to conserving uses. The conserving base included acreage devoted to (1) permanent or rotation cover of grasses and legumes, (2) summer winter cover crops consisting principally of small grains, annual legumes, or annual grasses, (3) small grain cover crops when used for any purpose other than grain, and (4) idle cropland including clean tilled and summer fallowed cropland.

G. County Committee--Persons elected by landowners and farm operators in a county to administer ASCS programs at the county level.

H. County Executive Director--Persons selected by the County Committee to manage the day-by-day operations of the County ASCS Office and to execute the policies of the county committee with in limitations established by legislation or regulations.

I. Disaster Payment--Payments made to landowners and operators who due to natural causes are prevented from planting an allotment crop or who experience below average production on their farm. Allotments and farm established yields are used to determine disaster payment eligibility.

J. Farm Storage and Drying Equipment Loan Program--Program involving cash loans to landowners for the construction of grain storage structures and for the purchase of grain drying equipment incorporated into a farm storage facility.

K. Indemnity Payments--Payments made to dairy farmers and beekeepers to compensate them for losses because of chemical residue in the milk or death of bees from chemical causes beyond the control of the dairy farmer of beekeeper.

L. Parity Ratio--The general relationship between prices received by the farmer for commodities compared to the prices he must pay for items purchased.

M. Projected Yields--A yield established for a farm, county or State using actual production during an established base period (usually the five years preceeding the year in which yields are determined.)

N. Target Prices--Price level established for allotment crops by the Agriculture and Consumer Protection Act of 1973 which will result in indirect payments to farmers if the national average market price for the first five months of the marketing year is below the established "target price."

II. History of farm legislation enacted to control production

A. Agricultural Adjustment Act of 1933 (AAA)

(NOTE: The Agricultural Adjustment Act was passed May 12, 1933. Its goal was to restore prices to farmers at a level which would give agricultural commodities their 1909 to 1914 purchasing power. A Supreme Court decision of 1936 invalidated the production control provisions, including the tax on marketing, provided under the AAA of 1933.)

B. Soil Conservation and Domestic Allotment Act of 1936

(NOTE: This act combined the objective of promoting soil conservation and profitable use of agricultural resources with that of reestablishing and maintaining farm income at fair levels. The goal of income parity, as distinguished from price parity, was introduced into legislation for the first time.)

C. Agricultural Adjustment Act of 1938

(NOTE: The Agricultural Adjustment Act of 1938 combined the conservation program of the 1936 legislation with new features designed to meet drought emergencies as well as the price and income crisis resulting from surplus production. A marketing control approach was substituted for direct production control. Authority was bssed on congressional power to regulate interstate and foreign commerce. The new features of the legislation included mandatory non-recourse loans for cooperating producers of corn, wheat, and cotton under certain supply and price conditions (if marketing quotas had not been rejected.) Loans were at the option of the U.S. Secretary of Agriculture for producers of other commodities. Marketing quotas were to be proclaimed for corn, cotton, rice, tobacco, and wheat when supplies reached certain levels. Referendums were to be used to determine whether the marketing quotas proclaimed by the Secretary should be put into effect. Another feature was parity payments to producers of corn, cotton, rice, tobacco, and wheat in amounts which would provide a return as nearly equal to parity as available funds would permit. These payments were to supplement and not replace other payments. In additon to payments authorized under the countinued Soil Conservation and Domestic Allotment Act for farmers in all areas, special payments were made in ten states to farmers who cooperated in a program to retire land unsuited to cultivation as part of a restoration land program initiated in 1938. The attainment of parity prices and parity income was stated as a goal of the legislation. Another goal was the protection of consumers by the maintenance of adequate reserves of food and fiber. Systematic storage of supplies made possible by non-recourse loans was the basis for the department's "Ever-Normal-Granary" plan.)

D. Agricultural Trade Development and Assistance Act (Public Law 480) of 1954

(NOTE: This act, which served as the basic authority for sale of surplus agricultural commodities for foreign currency, proved to be a major importance in disposing of farm products abroad.

The Agricultural Act of 1954 established price supports for the basic commodities on a flexible basis, ranging from 82.5 percent of parity to 90 percent for 1955, and from 75 percent to 90 percent thereafter.)

E. Agricultural Act of 1956--(Soil Bank)

(NOTE: The Soil Bank was a large-scale effort, similar in some respects to programs of the 1930's, to bring about adjustments between supply and demand for agricultural products by taking farmland out of production. The program was divided into two parts: (1) and acreage reserve: and (2) a conservation reserve. The specific objective of the acreage reserve was to reduce the amount of land planted to allotment crops wheat, cotton, corn, tobacco, peanuts, and rice. Under its terms, farmers cut land planted in these crops below established allotments; or, in the case of corn, their base acreage, and received payments for the diversion of such acreage to conserving uses. In 1957, 21.4 million acres were in the acreage reserve. The last year of the acreage reserve program was to secure the diversion of some of the land from production of Agricultural commodities into specific conservation uses. Agreements called for diversion of the cropland for five to ten years.)

F. The Feed Grain Act of 1961

(NOTE: It provided that the 1961 crop of corn should be supported at not less than sixty-five percent of parity (the actual rate was seventy-four percent) and established a special program for diverting corn and grain sorghum (and barley if designated by the Secretary of Agriculture) acreage to soil-conserving crops or practices. Producers were eligible for price supports only after retiring at least twenty percent of the average acreage devoted to the two crops in 1959 and 1960. Subsequent acts in 1962, 1963, and 1964 included wheat and cotton as well as the feed grains.)

G. The Food and Agriculture Act of 1965

(NOTE: Programs established by the Food and Agriculture Act of 1965 were in effect from 1966 through 1969. The Wool Act of 1954 and the voluntary feed grain program begun in 1961 were extended through 1969. The voluntary wheat certificate program begun in 1964 was extended through 1969 with only limited changes.

The Act established a cropland adjustment program. The secretary was authorized to enter into five-to-ten-year contracts with farmers calling for conversion of cropland into practices or uses which would: conserve water, soil, wildlife, or forest resourses: or establish, protect or conserve open spaces, national beauty, wildlife, or recreational resources: or prevent air or water pollution. Limited funding to enter into CAP contracts was provided in 1966 and 1967. Since that time the Congress has not authorized funds for any new CAP contracts.)

H. Agricultural Act of 1970

(NOTE: This legislation was enacted November 30, 1970. Major features of this act were:

1) Producers had more flexibility in making their farm-operating decisions.

2) It emphasized more reliance on the marketplace as the principal source of farm income.

Significant changes were made in the supply management programs for wheat, feed grains, and cotton. The existing adjustment programs for peanuts, tobacco, and rice which were a part of the agricultural legislation were continued without change.

The act included for the first time a limitation ($55,000) on the payments a participating producer would be entitled to receive. This limitation applied to each program (wheat, feed grains, and cotton) separately.

The portion of the act relating to wheat, feed grains, and cotton cover only the 1971, 1972, and 1973 crops. If new or extending legislation is not enacted during the 1973 legislative session, production adjustment work in 1974 will follow the provisions of prior legislation. The 1970 act also included a provision whereby farmers participating in the Set Aside program could receive additional payments for permitting the public to hunt or fish on the farm. In 1972 and 1973 this portion of the act was operated on a pilot basis in fifty counties (10 states, 5 counties each.) The test pilot program has been well received by both farmers and the public.)

I. Agriculture and Consumer Protection Act of 1973

(NOTE: This legislation was signed into law on August 10, 1973, and is applicable to the 1974 through 1977 crop year. It authorizes continuation of the cropland "set-aside" approach initiated in the Agricultural Act of 1970, however the Secretary of Agriculture has stated that a "set-aside" of land will not be required through the duration of the Act. Also, he has eliminated the requirement to maintain the farms normal conserving base in conserving crops.

The 1973 Act initiated an established or "target price" approach for the 1974-1977 crop years. Direct payments will not be made to program participants unless the national average market price for the first five months of the commodity marketing year falls below the target price established by the Act.

The Act also provided provisions under which a landowner or farm operator may earn payments if prevented from planting a crop due to natural causes or if either the actual or appraised production for the farm is below two-thirds of the amount determined by multiplying the farms commodity acreage allotment times the yield established for the farm.

The maximum total payment a person may receive by participation in government farm programs covered by the Act of 1973 is $20,000.

J. The Food And Agriculture Act of 1977

(NOTE: This legislation was signed into law on September 29, 1977 and is applicable to the 1978 through 1981 crop years. The 1977 Act continued the non-recourse loan provisions, set-aside approach and acreage diversion initiated in the Agricultural Act of 1970 and extended in the 1973 Act.

The 1977 Act substituted national program acreages for the acreage allotment system. The national program acreages (NPA) represents the estimated acreage needed to meet domestic and export need.

(less imports) plus any desired adjustments in stocks. The NPA may be adjusted at a later time based on the most recent information for purposes of calculating the program allocation factor. The Secretary of Agriculture is required to announce a tentative NPA by November 15 of the year before the crop is to be planted.

The Act also established a program allocation factor with the Secretary of Agriculture given authority to make adjustments as necessary. It extends to the Secretary of Agriculture the authority to implement set-aside acreage if he determines supplies are likely to be excessive. Set-aside acreage is based on a percentage of the current year's acreage planted for harvest. Generally, the set-aside acreage must be devoted to conservation practices in accordance with USDA regulations to assure weed control and protection from erosion.

Tje 1977 Act established new limits on the amount of payment a person could receive annually under the program. The total amount of payments which a person can receive by participating in government farm programs covered by the Act of 1977 is $50,000.)

II. ASCS Field Organization

A. Each State, plus Puerto Rico, has a three to five member committee appointed by the Secretary of Agriculture responsible for the establishment of policy and general guidelines to carry out ASCS programs at the State level. The director of the Cooperative Extension Service is an ex-officio member of each State ASCS Committee.

B. A State Executive Director and State office staff are employed by the State committee to execute the policies of the State committee, and to be responsible for the day-to-day operations of ASCS porgrams

C. District Directors, reporting to the State Executive Director, are responsible for the supervision of a specified number of counties to assure uniformity of administration of programs. Kansas is divided into nine districts for the administration of ASCS programs.

D. County committees of three members each are elected by eligible landowners and operators in each county to determine policy and establish guidelines within limitations established by legislation, regulations, or State committee action. The county agricultural extension director is an ex-officio member of the county committee

E. A county executive director is employed by the county committee to carry out committee policy and to supervise the day-to-day operation of the county office. The county executive director hires the necessary office and field personnel to carry out assigned programs in the county.

III. Primary responsibilities of the ASCS

A. To improve the economic stability of agriculture by aiding farmers to achieve supply-demand balances that result in an equitable share of both domestic and export markets, and an equitable return on those markets.

B. To maintain an even flow of quality products to market at reasonable price to both producer and consumer.

C. To improve and protect soil and water resources by aiding farmers to carry out conservation and land use practices.

IV. Principal activities of ASCS

A. Commodity support operations

Examples:
1) Loans to farmers on specified crops and facilities for storing those crops,
2) Direct purchase of commodities from farmers and processors,
3) Acreage set aside payments on specified commodities,
4) Production payments for wool and mohair,
5) Prevented planting and low yield payments resulting from conditions beyond control of the farmer

B. Production adjustment to balance supply and demand, for specified commodities

1. Wheat Program

2. Feed Grain Program

(NOTE: For specific information on these programs, contact the ASCS office.)

C. Conservation assistance through sharing with farmers and ranchers the cost of installing needed soil, water, woodland, and wildlife conservation and pollution abatement practices under the Agricultural Conservation Program. 1975 Kansas Agricultural Conservation Program Plan is now in use.

D. Forestry Incentive Program available in designated counties to encourage the planting of forestry products for timber production and to encourage improved management of existing timber resources.

E. Management of the Commodity Credit Corporation inventories acquired under commodity programs.

(NOTE: This was managed through sales, donations, storage, and related processing and shipping arrangements. The Export Marketing Service is responsible for programs dealing with the export of privately-owned agricultural commodities.)

F. The sugar program to provide an equitable sharing of the U.S. sugar market among domestic and foreign supplying areas, to protect the income of domestic producers, and to assure consumers a stable supply of sugar at reasonable prices. (The Sugar Act expired with the 1974 Crop year.)

G. Disaster and defense activities to augment feed supplies for farmers and ranchers in areas where natural disasters have reduced feed, to provide emergency conservation assistance in restoring farmlands seriously damaged by widespread flood or drought, and to assist in preparedness planning for civil defense.

V. Conservation Practices approved for Cost-Share assistance under the Agriculture Conservation Program

A. Establishing Permanent Vegetative Cover

B. Improving Permanent Vegetative Cover

C. Planting Trees

D. Improving a Stand of Forest Trees

E. Water Impoundment Reservoirs

F. Constructing Terrace Systems

G. Diversion Terraces

H. Permanent Wildlife Habitat

I. Sediment Retention, Erosion or Water Control Structures

J. Sediment, Chemical, or Water Runoff Control Measures

K. Windbreaks of Shelterbelts

L. Reorganizing Irrigation Systems

M. Developing Facilities for Livestock Water

N. Animal Waste Storage and Diversion Facilities

AGRICULTURAL STABILIZATION AND CONSERVATION SERVICE
UNIT VI

ASSIGNMENT SHEET #1--LOCAL FACTS ABOUT ASCS

Determine the following information by either visiting an ASCS office or listening to an ASCS employee talk to your class.

1. Name the members of the county ASCS committee.

2. Name the town where your ASCS office is located.

3. List the types of commodity support programs available to the farmers in your community.

4. List the production adjustment programs along with the principal participation requirements as they apply to your county.

    a. "Wheat" (If grown in your county)

c. Feed grains

d. Others

5. List conservation assistance through cost sharing arrangement with farmers and ranchers in your county.

6. List disaster and defense activities that have been provided to farmers in your county through ASCS. (In the past five years.)

AGRICULTURAL STABILIZATION AND CONSERVATION SERVICE
UNIT VI

TEST

1. Match the terms on the right with the proper definition.

_____a. Meeting the terms and conditions of a program agreement or contract.

_____b. The average acreage of cropland on the farm devoted in 1959 and 1970 to conserving uses.

_____c. Agency of the U.S. Dept. of Agriculture that administers specified commodity and related land use programs.

_____d. Relationship between prices received compared to the prices he must pay.

_____e. Payments made to farms who are prevented from planting an allotment crop or who experience below average production.

_____f. Loans to landowners for the construction of grain storage structures and for the purchase of grain drying equipment.

_____g. Persons elected by landowners and farm operators in a county to administer ASCS progams.

_____h. Cost-share program designed to assist and encourage landowners to carry out soil and water conservation practices.

_____i. Payments made to dairy farmers and beekeepers to conpensate them for losses because of chemicals, beyond the control of the dairy farmer or beekeeper.

1. Agricultural Conservation Program
2. Agricultural Stabilization and Conservation Service (ASCS)
3. Allotment
4. Compliance
5. Commodity Loan Program
6. Conserving Base
7. County Committee
8. County Executive Director
9. Disaster Payments
10. Farm Storage and Drying Equipment Loan Program
11. Indemnity Payments
12. Parity Ration
13. Projected Yields
14. Target Prices

_____j. By the Agricluture and Consumer Protection Act of 1973 which results in direct payments to farmers if the national average market prices are below them.

_____k. Loan program farmers using farm-stored or warehouse-stored grain as security for the loan.

_____l. A yield by using actual production during an established base period.

_____m. Apportioned to states, counties, and farms on the basis of the acreage planted to the commodity during specified base years.

_____n. Person to manage operations of the County ASCS Office and to execute the policies of the county committee.

2. Select form the list below the farm legislative acts that have been enacted through the years to control production. Place and "X" by the correct answers

_____a. Soil Conservation and Domestic Allotment Act of 1936

_____b. Agricultural Adjustment Act of 1933

_____c. Agricultural Adjustment Act of 1941

_____d. Agricultural Trade Development and Assistance Act (Public Law 480) of 1954

_____e. Agricultural Act of 1964 (Soil Bank)

_____f. The Feed Grain Act of 1961

_____g. Agricultural Act of 1970

_____h. Agriculture and Consumer Protection Act of 1973

3. Explain in writing how the ASCS is organized on the state and county level.

a. State----

b. County----

4. Select from the list below the primary responsibilities of the ASCS. Place an "X" by the correct answers.

   _____a. To maintain an even flow of quality products to market at a reasonable price to both producer and consumer

   _____b. To force farmers to carry out conservation and land use practices

   _____c. To improve the economic stability of agriculture by aiding farmers to achieve supply-demand balances that result in an equitable share of both domestic and export markets, and an equitable return on those markets

5. Name three activities of the ASCS.

   a.

   b.

   c.

6. List facts about your county ASCS.

   (NOTE: If this has not been accomplished prior to the test, ask your instructor when the above activity should be completed.)

7. List six conservation practices approved for cost-share assistance under the Agriculture Conservation Program.

   a.

   b.

   c.

   d.

   e.

   f.

AGRICULTURAL STABILIZATION AND CONSERVATION SERVICE
UNIT VI

ANSWERS TO TEST

1. a. 4
   b. 6
   c. 2
   d. 12
   e. 9
   f. 10
   g. 7
   h. 1
   i. 11
   j. 14
   k. 5
   l. 13
   m. 3
   n. 8
2. _X_ a.
   _X_ b.
   ___ c.
   _X_ d.
   ___ e.
   _X_ f.
   _X_ g.
   _X_ h.
3. a. State

   Each state, has a three to five member committee appointed by the Secretary of Agriculture responsible for the establishment of policy and general guidelines to carry out ASCS programs at the state level. The director of the Cooperative Extension Service is an ex-officio member of each state ASCS Committee.

A state executive director and state office staff are employed by the state committee to execute the policies of the state committee and to be responsible for the day-to-day operations of ASCS progams.

District directors, reporting to the state executive director, are responsible for the supervision of a specified number of counties to assure uniformity of administration of programs. Kansas is divided into nine districts for the administration of ASCS programs

b. County

County committees of three members each are elected by eligible landowners and operators in each county to determine policy and establish guidelines within limitations established by legislation, regulations, or state committee action. The county agricultural extension director is an ex-officio member of the county committee.

A county executive director is employed by the county committee to carry out committee policy and to supervise the day-to-day operation of the county office. The county executive director hires the necessary office and field personnel to carry out assigned programs in the county.

4. a

   c

5. Any three of the following:

   a. Commodity support operations

   b. Conservation assistance through sharing with farmers and ranchers the cost of installing needed soil, water, woodland, and wildlife conservation and pollution abatement practices under the Rural Environmental Assistance Program (REAP).

   c. Production adjustment bo balance supply and demand, for specified commodities

   d. Forestry incentive program available in designated counties to encourage the planting of forestry products for timber production and to encourage improved management of existing timber resources

   e. Management of the Commodity Credit Corporation inventories acquired under commodity programs

   f. The sugar program to provide an equitable sharing of the U.S. sugar market among domestic and foreign supplying areas, to protect the income of domestic producers, and to assure consumers a stable supply of sugar at reasonable prices

   g. Disaster and defense activities to augment feed supplies for farmers and ranchers in areas where natural disasters have reduced feed, to provide emergency conservation assistance in restoring farmlands seriously damaged by widespread flood or drought, and to assist in preparedness planning for civil defense.

6. Evaluated to the satisfaction of the instructor.
7. List any six of the Regular ASCS practices:
    a. Establishing permanent vegetative cover
    b. Improving permanent vegetative cover
    c. Planting trees
    d. Improving a stand of forest trees
    e. Water impoundment reservation
    f. Constructing terrace systems
    g. Diversion terraces
    h. Permanent wildlife habitat
    i. Sediment retension, erosion or water control structures
    j. Sediment, chemical, or water runoff control measures
    k. Windbreaks of shelterbelts
    l. Reorganizing irrigation systems
    m. Developing facilities for livestock water
    n. Animal waste storage and diversion facilities

LANDSCAPING
UNIT IX

TERMINAL OBJECTIVES

After completion of this unit, the student should be able to design a basic landscape plan showing the three major areas. He should be able to recognize basic landscape plants and determine their location within the plan. He should be able to adapt this knowledge and skill to his home farm, community, and school. This knowledge will be evidenced by scoring eighty-five percent on a unit test.

SPECIFIC OBJECTIVES

After completion, the student should be able to:

1. Define five terms associated with landscaping.
2. Divide a landscape plan into the three major use areas.
3. Recognize and name the overall objectives of a landscape plan.
4. Name five factors to consider in selecting plants for a landscape plan.
5. Name and apply five rules of thumb to follow in drawing a landscape plan.
6. Recognize and apply the basic symbols in drawing a landscape plan.
7. List five functions of plant material in a farm landscape.
8. Distinguish between trees and shrubs.
9. Collect and identify ten samples of trees or shrubs used in a landscape plan.
10. Draw a landscape complete plan to 1/8 or 1/4 scale.

LANDSCAPING
UNIT IX

SUGGESTED ACTIVITIES

I. Instructor
   - A. Provide students with objective sheet
   - B. Provide students with information and assignment sheets
   - C. Make transparencies.
   - D. Discuss terminal and specific objectives
   - E. Discuss information and assignment sheets
   - F. Conduct field trip to observe landscape plans
   - G. Give test
   - H. Discuss color slides taken at local landscapes - both good and poor

II. Students
   - A. Read objectives
   - B. Study information sheet
   - C. Complete assignments and turn in for grade
   - D. Take test

INSTRUCTIONAL MATERIALS

I. Included in this unit
   - A. Objectives
   - B. Information sheet
   - C. Transparency masters

     TM 1--Major Areas of Landscape Plan
     TM 2--Basic Landscaping Symbols
     TM 3--Basic Landscaping Symbols
     TM 4--Basic Landscaping Symbols
   - D. Assignment sheets

     Assignment sheet #1--Collecting and Identifying Trees and Shrubs
     Assignment sheet #2--Drawing a Landscaping Plan
   - E. Test
   - F. Answers to test

II. References

A. Principles of Horticulture, Ervin L. Denisen, The MacMillan Company, New York, New York.

B. Cooperative Extension Bulletins, KSU Extension Service, Manhattan Kansas, 66502.

1. Lawns in Kansas XC-327
2. Planning for a Better Community Landscape XC-369
3. Landscape Development for Urban Home XC-379
4. Site Planning for Home Landscape Development XC-381
5. Kansas Garden Guide XC-436
6. Landscape and Ornamental Trees for Northwest Kansas XC-440
7. Landscape and Ornamental Trees for Southwest Kansas XC-441
8. Ground Covers and Rock Gardern Plants XC-468
9. Shrubs for Kansas Landscape XC-469
10. Street Trees for Kansas Communities XC-481
11. Trees for Kansas Landscapes XC-482
12. Groundcovers and Rock Garden Plants XMF-321
13. Evergreens for Kansas Landscapes C-488
14. Landscaping, Sunset Books, Lane Magazine and Book, Co., Menlo Park, California 94025.
15. Windbreaks in Kansas L-141
16. Plants, Man, and Environment C-448
17. Homeowner Landscape Workshop - KSU
18. What Should I Plant C-292

LANDSCAPING
UNIT IX

INFORMATION SHEET

I. Terms and definitions

   A. Landscape design - The art of developing land for use and enjoyment in such a way to provide maximum utility and beauty

   B. Deciduous - The plants having no living leaves during dormant season; shed their leaves seasonally

   C. Evergreen - The plants retaining functional leaves throughout the year

   D. Formal balance - The precise and methodical treatment of an area to produce geometric exactness

   E. Ground cover - A planting of low plants (as ivy) that cover the ground in place of turf

   F. Conifers - Mostly evergreen trees and shrubs, including forms (as pines) with true cones, and others (as Yews) with an arillate fruit

II. Major areas of plan (Transparency 1)

   A. Public - The area that lies between the street or highway and the house

   B. Private - The area used for outdoor relaxation, rest, entertainment, and general family enjoyment

   C. Service - The area conveniently located near the kitchen, utility room, garage, and driveway

III. Objectives of landscape "plan"

   A. A plane enables one to think of the total landscape instead of just its parts

   B. It helps to organize outdoor space relationships

   C. It is easier and cheaper to change mistakes on paper than to move plants, etc.

   D. It allows development of the landscape to be budgeted

   E. It aids in the planning of details

IV. Factors to consider in selecting trees, shrubs, and other plant materials

   A. Use of the plant material in the landscape

   B. Free from disease

   C. Mature size

      1. Tall houses and buildings use tall growing trees

      2. Low rambling houses require small trees

   D. Shape

   E. Time of flowering

   F. Fall foliage color

   G. Climatic conditions

V. Rules of thumb in drawing a landscape plan

   A. Should never be planted closer than three feet to house

   B. Do not over plant

   C. Do not cover windows

   D. Plant large trees at least 20 feet from house

   E. Use 1/8 or 1/4 inch scale in landscape drawing

   F. Shrubs around the home should be shortest near the doors and in ascending order so that the tallest are at the corners

   G. Shrubs height should not exceed 2/3 the distance from the ground to the eve of the house

VI. Landscape plan symbols (Transparencies 2, 3, and 4)

VII. Function of plants in farm landscape

   A. Create privacy

   B. Accent and enframe a building and create background setting

   C. Screen objectionable views

   D. Reduce crop and livestock losses

   E. Reduce wind and snow blowing

   F. Beautify the farmstead

   G. Protect gardens, orchards, and ornamentals

   H. Provide food and cover for wildlife

I. Provide shade and reduce glare

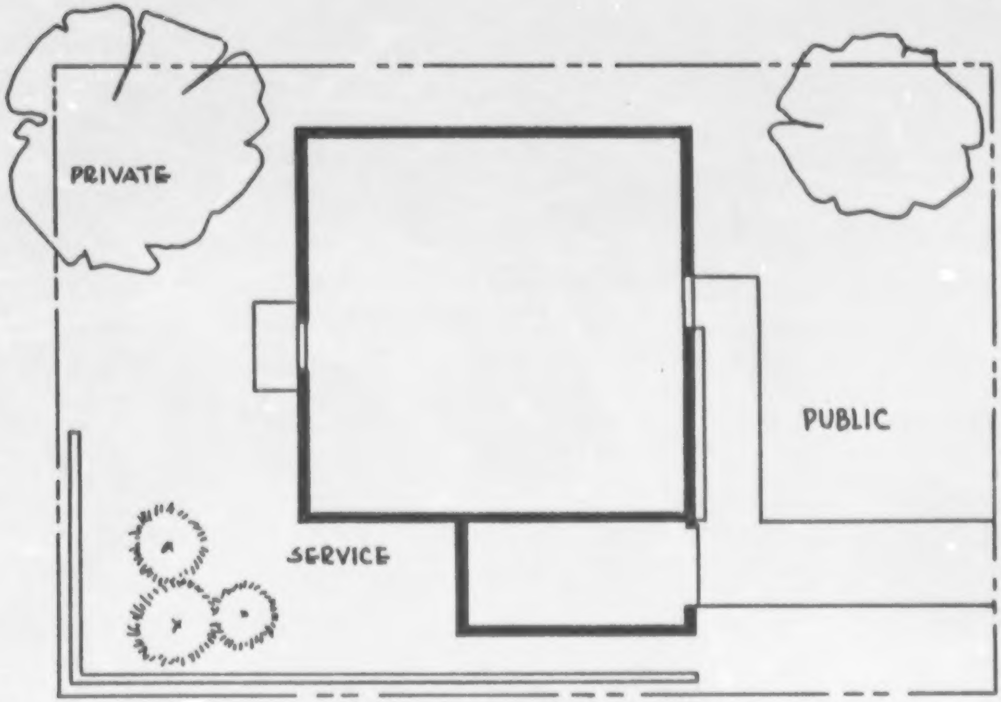
J. Reduce fuel bills

K. Reduce erosion

VIII. Landscape plant material

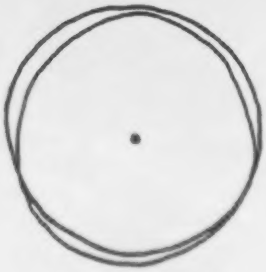
Name	Shrub	Tree	Height	Spread
American Elm		X	70-120'	60-80'
Burford Holly	X		8- 10'	3- 5'
Pyracantha	X		8- 10'	8-10'
Honey Locust		X	40- 60'	30-40'
Redbud		X	15- 30'	10-20'
Red Cedar		X	20- 90'	7-30'
Glossy Abelia	X		6- 7'	4- 5'
Sycamore		X	70-100'	70-80'
Green Ash		X	50- 70'	40'
Arborvitae	X		4- 6'	3- 4'
Pfitzer Juniper	X		4- 8'	10-18'
Euonymus	X		4- 8'	5-10'
Cotoneaster	X		10- 12'	8-10'
Scotch Pine		X	40- 50'	18-20'
Austrian Pine		X	40- 60'	18-25'
Lilac Common	X		12- 15'	12-15'
Mimosa		X	30- 40'	40-50'
Forsythia	X		6- 8'	6- 8'
Bald Cypress		X	50- 70'	30-50'
Honey Suckle	X		10- 12'	8-10'
Privet	X		2- 4'	2- 4'
Lombarly Poplar		X	50- 60'	10-15'
Pin Oak		X	50- 80'	30-40'
Bur Oak		X	75- 90'	50-70'
Nandina	X		4- 8'	3- 4'

Major Areas of Landscape Plan

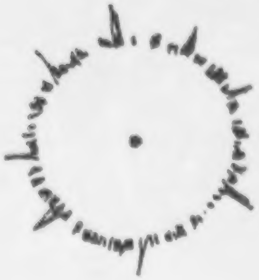

PRIVATE
PUBLIC
SERVICE

LANDSCAPE PLANNING SYMBOLS

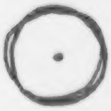
1. Deciduous Tree



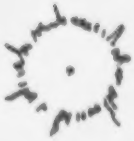
2. Evergreen Tree



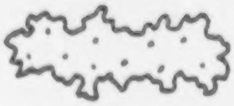
3. Deciduous Shrub



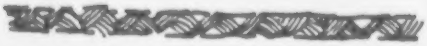
4. Evergreen Shrub



5. Ground Cover or
Flowers

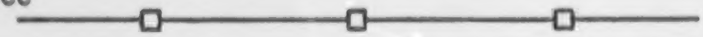


6. Sheared Hedge

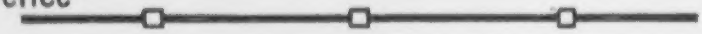


LANDSCAPE PLANNING SYMBOLS

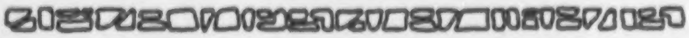
7. Open or Wire Fence



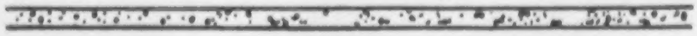
8. Screen or Solid Fence



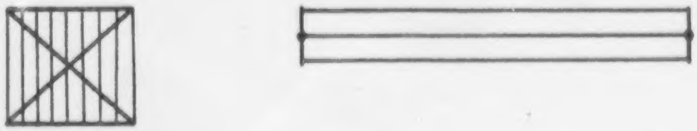
9. Retaining Wall, Rock



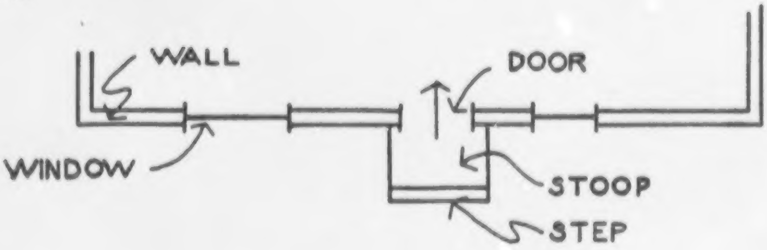
10. Retaining Wall, Concrete



11. Clothes Line

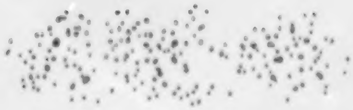


12. Building Details

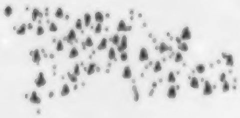

WALL
DOOR
WINDOW
STOOP
STEP

LANDSCAPE PLANNING SYMBOLS

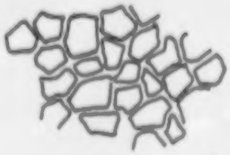
13. Gravel Surface



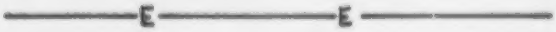
14. Concrete Surface



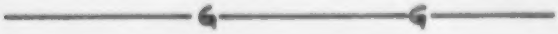
15. Flagstone or Cut Stone Surface



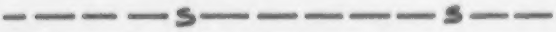
16. Electric Line



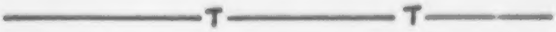
17. Gas Line



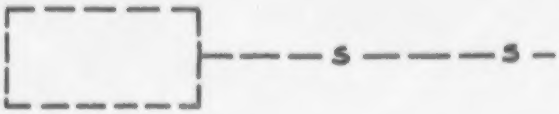
18. Sewer or Septic Line



19. Telephone Line



20. Septic Tank



LANDSCAPING
UNIT IX

ASSIGNMENT SHEET #1--COLLECTING AND IDENTIFYING TREES AND SHRUBS

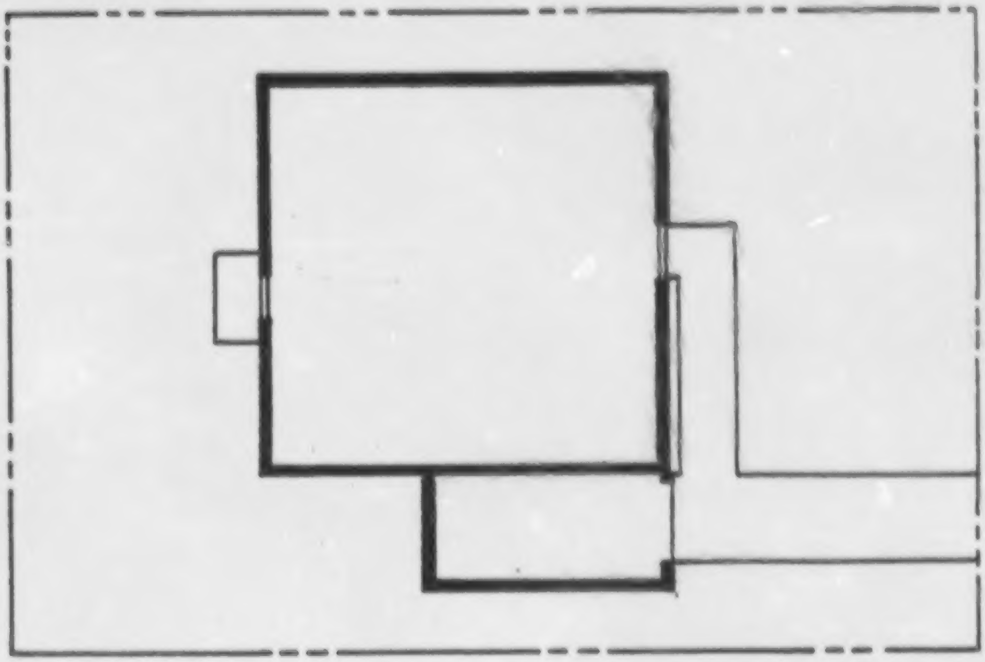
Collect and identify ten samples of trees or shrubs found in your local community. Bring plants to class with the completed chart.

Plant Name	Tree	Shrub
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

LANDSCAPING
UNIT IX

ASSIGNMENT SHEET #2--DRAWING A LANDSCAPE PLAN

Using the basic symbols, draw a rough draft of a landscape plan showing the location of trees, shrubs, flower beds, or other features. Your plan should be attractive, interesting, convenient, and useful. (NOTE: Follow the suggested steps sheet.)



ASSIGNMENT SHEET #2

Suggested steps to designing a residential landscape site:

Step I. Obtain an analysis of family landscape needs and a complete site analysis.

Step II. Layout or divide yard into separate use areas.

Step III. Locate and design elements to be constructed. (In their respective use areas.)

Example: Public Area -

DRIVE
PARKING
ENTRANCE LANDING
WALKWAYS
FENCE

Service Area -

CLOTHESLINE
GARAGE STORAGE
COMPOST PILE
WALKWAYS

Family Living Area -

PATIO
WALKWAYS

Step IV. Locate trees.

Shade
Enframement
Background
Screen
Color

Step V. Locate shrubs.

Separate areas
Screen
Accent
Soften

Step VI. Locate flower beds.

LANDSCAPING
UNIT IX

TEST

1. Define the following terms:
    a. Evergreen plant -
    b. Conifers -
    c. Deciduous -
    d. Landscape design -
    e. Ground cover -

2. Name four overall objectives of a landscape plan.
    a.
    b.
    c.
    d.

3. Name five factors to consider in selecting plant materials for a landscape plan.
    a.
    b.
    c.
    d.
    e.

4. Name five functions of plants in a farm landscape.
    a.
    b.
    c.
    d.
    e.

5. What are four rules of thumb an individual should apply in drawing a landscape plan?

a.

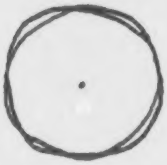
b.

c.

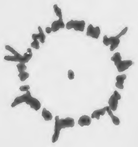
d.

6. Identify the following symbols used in a landscape plan.

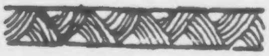
a.



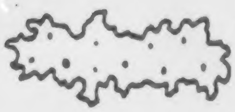
b.



c.



d.



7. Arrange the list of landscape plants below into two groups - trees and shrubs. Place a "T" in the blank indicating a tree and an "S" indicating a shrub.

_____a. Green Ash

_____b. Forsythia

_____c. Pin Oak

_____d. Cotoneaster

_____e. Bur Oak

_____f. Red Cedar

_____g. Euonymus

_____h. Common Lilac

_____i. Pfitzer Juniper

_____j. Bald Cypress

_____k. Sycamore

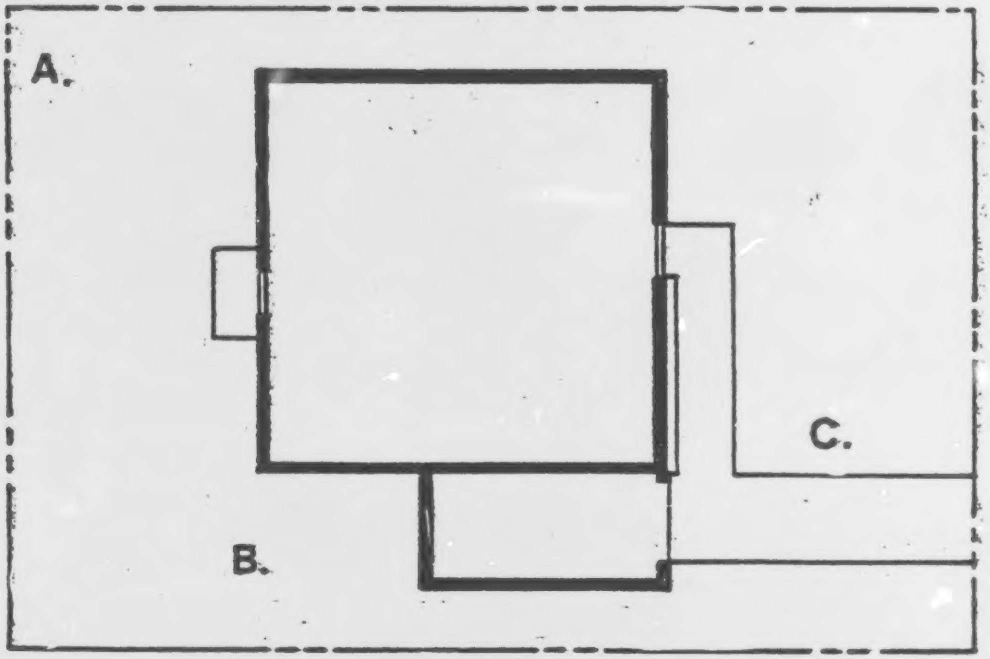
_____l. Lombardy Poplar

_____m. Burford Holly

_____n. Elm

_____o. Nandina

8. Label this landscape plan according to the three major use areas.



A.

B.

C.

LANDSCAPING
UNIT IX

ANSWERS TO TEST

1. a. Evergreen plant - A plant that retains functional leaves throughout the year
   b. Conifers - Mostly evergreen trees and shrubs, including forms (as pines) with true cones, and others (as yews) with an arillate fruit
   c. Deciduous - The plants that have no living leaves during dormant season - shed their leaves seasonally
   d. Landscape design - The art of developing land for use and enjoyment in such a way to provide maximum utility and beauty
   e. Ground cover - A planting of low plants (as ivy) that covers the ground in place of turf

2. a. A plan enables one to think of the total landscape
   b. It helps to organize outdoor space relationships
   c. It is easier and cheaper to change mistakes on paper
   d. It allows development of the landscape to be budgeted

3. a. Use of the plant material in the landscape
   b. Time of flowering
   c. Mature size
   d. Shape
   e. Climatic conditions

4. a. Create privacy
   b. Screen objectionable views
   c. Beautify the farmstead
   d. Accent and enframe a building
   e. Provide shade and reduce glare

5. a. Do not over plant
   b. Do not cover the windows
   c. Plant large trees at least 20 feet from the house
   d. Shrub height should not exceed 2/3 distance from the ground to the eve of the house

6. a. Deciduous tree
   b. Evergreen tree
   c. Sheared hedge
   d. Groundcover or flower

7. a. T
   b. S
   c. T
   d. S
   e. T
   f. T
   g. S
   h. S
   i. S
   j. T
   k. T
   l. T
   m. S
   n. T
   o. S

8. a. Private
   b. Service
   c. Public

LAND JUDGING
UNIT I

TERMINAL OBJECTIVES

After completion of Unit I, the student should be able to judge land, recommend land treatments and complete the score card. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with land judging to the correct definition.
2. Name the reasons for judging land.
3. Name the six factors used in determining the land capability class.
4. Match the different variations of permeability, depth, slope, erosion, and surface runoff with the identifying characteristics of each.
5. Name the three major groups of soil in relation to texture.
6. Discuss in a short paragraph the means of determining soil texture by touch.
7. Match the land capability classes with the proper definition.
8. Classify the eight land capability classes according to their proper usage.
9. Select, when given six land factors, the best land class possible for the specified field.
10. Select the recommended land treatments when given the land capability class.
11. Name the proper fertilizer and soil amendments when given the deficiency.
12. List two combination land factors which lowers the land capability class.
13. Demonstrate the ability:
    a. Complete a land judging score card when given the characteristics of a field.
    b. Judge a field and complete the score card

LAND JUDGING
UNIT I

SUGGESTED ACTIVITIES

I. Instructor:

- A. Provide students with objective sheet
- B. Provide students with information and assignment sheets
- C. Make transparencies
- D. Discuss terminal and specific objectives
- E. Discuss information and assignment sheets
- F. Conduct field trip to judge a previously prepared land site
- G. Give test

II. Student:

- A. Read objective sheet
- B. Study information sheet
- C. Complete assignment sheets
- D. Participate in field trip
- E. Take test

INSTRUCTIONAL MATERIALS

I. Included in this unit:

- A. Objectives
- B. Information sheet
- C. Transparency masters
  - 1. TM #1 - Soil Profile
  - 2. TM #2 - Textural Groups and Soil Textures
- D. Assignment sheets
  - 1. Assignment sheet #1 - Selecting Proper Fertilizer and Soil
  - 2. Assignment sheet #2 - Completing Land Judging Score Card
- E. Answers to assignment sheets
- F. Test
- G. Answers to test

II. References:

- A. Instructions in Land Judging and Homesite Evaluation; Cooperative Extension Service, Kansas State University, Manhattan, Kans. 66502

LAND JUDGING
UNIT I

INFORMATION SHEET

I. Terms and definitions

A. Surface texture - Proportion of sand, silt, and clay in a soil mass

B. Soil consistency - Way that soil particles hold together or resist being broken apart

C. Soil structure - Way that individual soil particles are grouped together to form clusters of particles

D. Topsoil - Soil directly under our feet; "A" horizon zone in which seeds are planted and cultivated (Transparency 1)

E. Subsoil - layer found just below the topsoil; this layer is the "B" horizon and the storehouse for moisture and minerals

F. Substratum - Area immediately below the subsoil; this is "C" horizon

G. Permeability - Ease with which air and water go down into the soil and return back toward the surface

H. Erosion - Amount of soil that has been removed

(NOTE: Erosion occurs either by wind or by water.)

I. Surface runoff - Relative rate water is removed by flow over the soil surface

J. Soil depth - Total thickness of topsoil and subsoil down to parent material

K. Slope - Number of feet fall in each 100 feet

(NOTE: This is determined by dividing feet traveled into rise or fall.)

L. Capability class - Classification of land according to its productive capacity and conservation treatment required to check erosion

M. Inhibitory factors - Conditions which hinder land and limit its capability

Examples: Stoniness, wetness, gravelly, salt accumulations, and flooding

N. Soil conserving crops - Crops that prevent or retard erosion and tend to maintain rather than deplete soil organic matter

(NOTE: Close seeded crops are generally regarded as soil conserving crops.)

O. Soil improving crops - Improve or replenish rather than deplete soil organic matter; improve soil structure and tilth

P. Lime - Calcareous ingredient that neutralized acidity and supplies calcium to the soil

II. Reasons for judging land

   A. Aids in the understanding and importance of basic soil differences as they affect crop production and erosion

   B. Helps one to determine management practices important to proper use of soil and water

   C. Develops understanding of different soil and water conservation practices

   D. Aids in understanding the influence of land features on production and land protection

   E. Aids in selecting a farm for purchase

III. Factors determing land capability class

   A. Surface texture

   B. Permeability

   C. Depth of soil

   D. Slope

   E. Erosion

   (NOTE: This includes wind and water.)

   F. Surface runoff

IV. Land factor variations

   A. Degrees of permeability

      1. Rapid - Soils that have sandy subsoils

      2. Moderate - Soils that have highly granular, clay loam subsoil

      3. Slow - Soils that have crumbly, clayey subsoil

      4. Very slow - Soils that have dense, heavy clay or clay pan subsoils

   B. Soil depths

      1. Deep - More than 36 inches deep

      2. Moderately deep - Twenty to 36 inches deep

      3. Shallow - Ten to 20 inches deep

      4. Very shallow - Less than 10 inches deep

   C. Degrees of slope

      1. Nearly level - Less than 1 foot fall in each 100 feet (0-1%)

      2. Gently sloping - One to 3 feet fall in each 100 feet (1-3%)

      3. Moderately sloping - Three to 5 feet fall in each 100 feet (3-5%)

4. Strongly sloping - Five to 8 feet fall in each 100 feet (5-8%)
5. Steep - Eight to 12 feet fall in each 100 feet (8-12%)
6. Very steep - More than 12 feet fall in each 100 feet (12% - and over)

D. Degrees of erosion

1. None to slight - Less than 25 percent surface soil removed with no gullies
2. Moderate - Twenty-five to 75 percent of surface soil removed with or without crossable gullies
3. Severe - Seventy-five percent or more of the surface soil removed or with occasional uncrossable gullies (gullies more than 100" apart) and/or severe accumulation by wind

   (NOTE: An uncrossable gully is that which cannot be crossed or is very difficult to cross with farm equipment.)

4. Very severe - Seventy-five percent or more of surface soil removed or with frequent uncrossable gullies (gullies less than 100' apart) and/or severe accumulation by wind

E. Variance in surface runoff

1. Rapid - Surface water flows rapidly; fields with slopes of 3 percent and above (except rapid permeability soils) would go in this category
2. Moderate - Normal runoff from soils and slopes of 1 to 3 percent; rapidly permeable soils excepted
3. Slow - Surface water flows away slowly; surplus water on clayey soils is an occasional problem
4. Very slow - Surface water flows away very slowly; soils may remain wet for long periods of time

V. Major groups of soil in relation to texture

A. Sandy soil - Includes coarse textured, very sandy soils

B. Loamy soil - Includes moderately coarse, medium textured, and moderately fine textured soils

C. Clayey soil - Includes fine-textured soils

VI. Determining soil texture by touch

A. Sandy soils - When rubbed between the fingers this soil has a rough gritty feeling (no ribbon)

B. Loamy soil - When rubbed between the fingers this soil has a touch of velvet or the feel of wheat flour (1" - 3" ribbon)

C. Clayey soils - When rubbed between the fingers this soil feels sticky (2" - 4" ribbon)

(NOTE: Soil texture by touch is easier to determine when soil is moist.)

VII. Land capability classes

A. Class I - Soils having few limitations that restrict their use; overhead water does not change the land class - treatment is usually on adjacent soils

B. Class II - Soils having some limitations that reduce the choice of plants or require moderate conservation practices

C. Class III - Soils having severe limitations that reduce the choice of plants or require special conservation practices or both

D. Class IV - Soils having very severe limitations that restrict the choice of plants, require very careful management, special conservation or both

E. Class V - Soils having little or no erosion hazards, but having other limitations that are impractical to remove that limits their use largely to pasture, range, woodland or wildlife food and cover; these include very poor drainage with wet poorly drained profiles or frequently flood areas

F. Class VI - Soils having severe limitations that make them generally unsuited for cultivation and limits their use largely to pasture or range, woodland, or wildlife food and cover

G. Class VII - Soils having very severe limitations that make them unsuited for cultivation and restricts their use largely to grazing, woodland, or wildlife

H. Class VIII - Soils and land forms having limitations that preclude their use for commercial plant production and restrict their use to wildlife, recreation, water supply or scenic purposes

VIII. Suitable uses for capability classes

A. Classes I, II, III, IV - Suited for cultivation and other uses such as grazing, forestry, or wildlife food and cover

B. Classes V, VI, VII - Land not suited for cultivation; suited for grazing, forestry, or wildlife food and cover

C. Class VIII - Land not suited for cultivation, grazing, or forestry; used for wildlife, recreation, water supply, or scenic purposes

IX. General guide for selecting land capability classes

Soil Factor	Best Land Class Possible
A. Texture	
1. Sandy soils	III
2. Loamy soils	I
3. Clayey soils	I

2. Do not burn crop residue - Applies to Classes I, II, III, IV
3. Use residue management and/or minimum tillage - Applies to Class I, II, III, IV
4. Establish recommended grass or grass and legumes - Applies to Class V, VI, VII
5. Use proper pasture and range management - Applies to Class V, VI, VII,
6. Protect land from burning - Applies to Classes V, VI, VII, VIII
7. Use control grazing - Applies to classes V, VI, VII
8. Plant recommended trees - Applies to land needing a windbreak or whenever operator desires to go into timber production or post lot production
9. Harvest trees selectively - Applies to land operator who desires to go into timber production or who desires post lot or wood lot
10. Use land only for wildlife or recreation area - Applies to Class VIII

B. Mechanical land treatments that may be used
   1. Control brush or trees - This sometimes is used in all capability classes with the exception of Class VIII
   2. Terrace and farm on contour - May apply to Classes II, III, and IV depending on soil, slope, cover, erosion and intensive use
   3. Maintain terraces - This practice should be used anytime terracing and farming on contour is recommended
   4. Construct diversion terraces - This practice should be used whenever field has overhead water problem
   5. Install drainage stytem - Used where wetness is a factor
   6. Control gullies - This practice should be used when gullies are are a problem (either crossable or uncrossable)
   7. A field can be found that would need no mechanical treatment - this could apply to Classes I, II, III, IV, V, VI, and VII

XI. Fertilizer and soil amendments that might be applied
   A. Lime - Necessary when soil test reveals acid condition
   B. Phosphate (P) - Necessary when soil test reveals deficiency in phosphorus
   C. Potash (K) - Necessary when soil test reveals deficiency in potassium
   D. Nigrogen (N) - Necessary when soil test reveals deficiency in nitrogen
   E. Nitrogen, phosphate, and potash - Necessary when soil test reveals deficiency in nitrogen, phosphorus, and potassium
   F. Fertilizer or soil amendments not needed - neither line, N, P, nor K are low enough to merit application.

XII. Land Judging Combinations

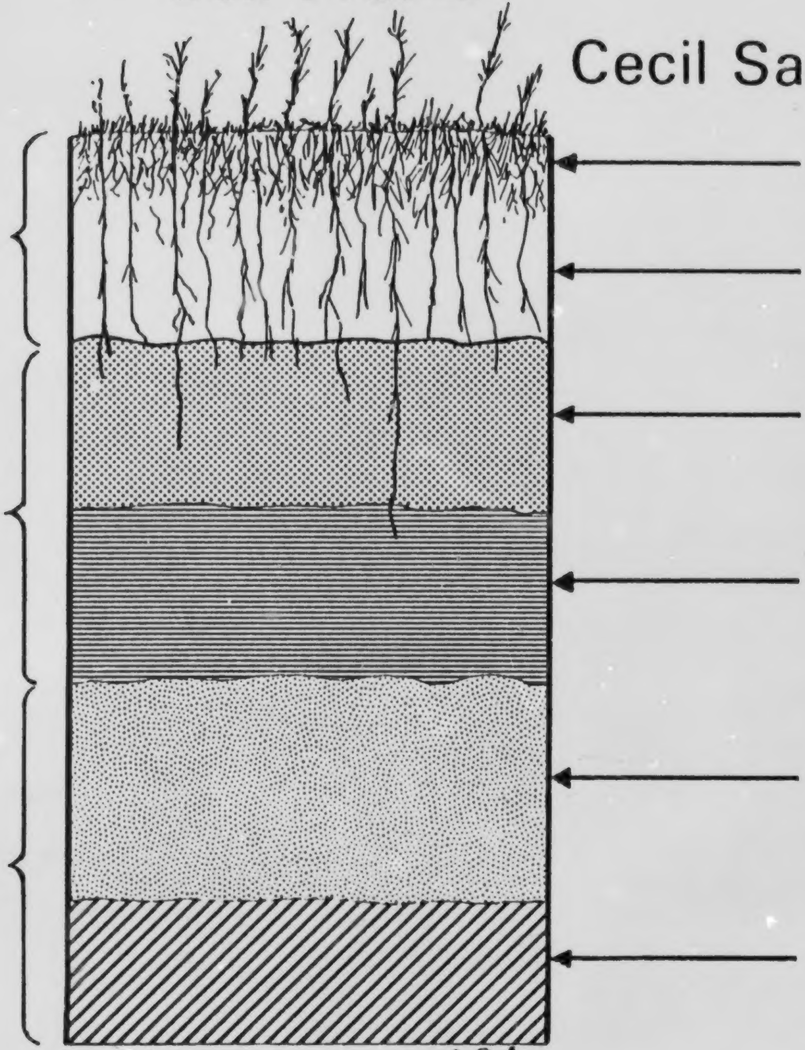
A. In many cases a field will have a combination of factors which will lower its land capability class.

B. Examples

1. Sandy soils (3) and Moderate Slope (3) - - - 4
2. Very Slow Permeability (2) and Very Slow Runoff (2) - - - 3
3. Very Slow Permeability (2) and Gently Sloping (2) - - - 3
4. Very Slow Permeability (2) and Moderate Slope (3) - - - 4
5. Very Slow Permeability (2) and Strongly Slope (4) - - - 6
6. Gently Sloping (2) and Moderate Erosion (2) - - - 3
7. Strongly Sloping (4) and Shallow Depth (3) - - - 6
8. Very Severe Erosion (6) and Shallow Depth (3) - - - 7
9. Very Severe Erosion (6) and Steep Slope (6) - - - 7
10. Very Severe Erosion (6) and Very Steep Slope (6) - - - 7

Soil Profile

Cecil Sandy Loam



TOPSOIL
(A Horizon)
Sandy Loam

SUBSOIL
(B Horizon)
Clay

SUBSTRATUM
(C Horizon)
Rock

Humus

Less Humus

Friable Clay

Stiff Clay

Soft Rock

Solid Rock

Textural Groups and Soil Textures

Sandy Soils	Coarse Textured Very Sandy Soils	Sands Loamy Sands
Loamy Soils	Moderately Coarse Textured Soils	Sandy Loam Fine Sandy Loam
	Medium-Textured Soils	Very Fine Sandy Loam Loam Silt Loam Silt
	Moderately Fine Textured Soils	Clay Loam Sandy Clay Loam Silty Clay Loam
Clayey Soils	Fine-Textured Soils	Sandy Clay Silty Clay Clay

LAND JUDGING
UNIT I

ASSIGNMENT SHEET #1 - SELECTING PROPER FERTILIZER AND SOIL AMENDMENTS

Select the proper amendments for the following deficiencies.

1. __________Soil deficient in phosphorus
2. __________Soil deficient in potassium
3. __________Soil deficient in nitrogen and potash
4. __________Soil deficient in N, P, and K
5. __________Soil deficient in N
6. __________Soil is acid

a. Lime
b. Phosphate
c. Potash
d. Nitrogen
e. Nitrogen, Phosphate, and Potash

LAND JUDGING
UNIT I

ASSIGNMENT SHEET #2 - COMPLETING LAND JUDGING SCORE CARD

Apply the following land class factors and field conditions to the judging score card.

1. Texture - Feel of wheat flour
2. Permeability - Granular, clay loam
3. Depth - Twenty-six inches
4. Slope - Three and one-half feed fall in each 100 feet
5. Erosion - Thirty percent of top soil removed, no gullies
6. Surface drainage - Excessive runoff
7. Soil tests - Show deficiencies in nitrogen

ASSIGNMENT SHEET #2

LAND JUDGING SCORE CARD

LJ-1

(Indicate your answer by an X in the square with number.)

Contestant No. ____________

Field No. ____________

Name ____________

Address ____________

FFA ____________ Chapter ____________ County

4-H ____________ Club ____________ County

PART I—LAND CLASS FACTORS

SCORE

A. SURFACE TEXTURE
- ☐ 1. Sandy soils
- ☐ 2. Loamy soils
- ☐ 3. Clayey soils

B. PERMEABILITY
- ☐ 1. Rapid
- ☐ 2. Moderate
- ☐ 3. Slow
- ☐ 4. Very slow

C. DEPTH OF SOIL
- ☐ 1. Deep
- ☐ 2. Moderately deep
- ☐ 3. Shallow
- ☐ 4. Very shallow

D. SLOPE
- ☐ 1. Nearly level
- ☐ 2. Gently sloping
- ☐ 3. Moderately sloping
- ☐ 4. Strongly sloping
- ☐ 5. Steep
- ☐ 6. Very steep

E. EROSION—WIND & WATER
- ☐ 1. None to slight
- ☐ 2. Moderate
- ☐ 3. Severe
- ☐ 4. Very severe

F. SURFACE RUNOFF
- ☐ 1. Rapid
- ☐ 2. Moderate
- ☐ 3. Slow
- ☐ 4. Very slow

G. MAJOR FACTORS — That keep area out of Class I:
- ☐ 1. Texture
- ☐ 2. Permeability
- ☐ 3. Depth
- ☐ 4. Slope
- ☐ 5. Erosion
- ☐ 6. Runoff
- ☐ 7. Wetness
- ☐ 8. Flooding
- ☐ 9. None

H. LAND CAPABILITY CLASS
- ☐ 1. Class I
- ☐ 2. Class II
- ☐ 3. Class III
- ☐ 4. Class IV
- ☐ 5. Class V
- ☐ 6. Class VI
- ☐ 7. Class VII
- ☐ 8. Class VIII

PART II—RECOMMENDED LAND TREATMENTS— Needed for land capability classes

SCORE

VEGETATIVE

Use soil conserving and/or soil improving crops:
- ☐ 1. Every 4th or 5th year.
- ☐ 2. Every 3rd or 4th year.
- ☐ 3. Every 2nd year.
- ☐ 4. Every year.

- ☐ 5. Do not burn crop residue.
- ☐ 6. Residue management and/or minimum tillage.
- ☐ 7. Establish recommended grass or grasses and legumes.
- ☐ 8. Proper pasture and range management.
- ☐ 9. Protect from burning.
- ☐ 10. Control grazing.
- ☐ 11. Plant recommended trees.
- ☐ 12. Harvest trees selectively.
- ☐ 13. Use only for wildlife or recreation area.

MECHANICAL
- ☐ 14. Control brush or trees.
- ☐ 15. Terrace and farm on contour.
- ☐ 16. Maintain terraces.
- ☐ 17. Construct diversion terraces.
- ☐ 18. Install drainage system.
- ☐ 19. Control gullies.
- ☐ 20. No mechanical treatment needed.

FERTILIZER & SOIL AMENDMENTS
- ☐ 21. Lime
- ☐ 22. Phosphate (P)
- ☐ 23. Potash (K)
- ☐ 24. Nitrogen (N)
- ☐ 25. Fertilizer or soil amendments not needed.

SCORE PART I ________ (Possible 40)

SCORE PART II ________ (Possible 30)

TOTAL SCORE (Possible 70) ________

Cooperative Extension Service, Kansas State University, Manhattan, Kansas

LAND JUDGING
UNIT I

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

1. b
2. c
3. c and d
4. e
5. d
6. a

Assignment Sheet #2

Part I

A. 2
B. 2
C. 2
D. 3
E. 2
F. 1
G. 4, 5, 6
H. 3

Part II

3, 5, 6, 15, 16, 24

LAND JUDGING
UNIT I

TEST

1. Match the terms on the left with the definition on the right

_____a. Erosion
_____b. Substratum
_____c. Permeability
_____d. Subsoil
_____e. Topsoil
_____f. Soil consistency
_____g. Surface texture
_____h. Soil structure
_____i. Surface runoff
_____j. Soil depth
_____k. Lime
_____l. Slope
_____m. Capability class
_____n Soil conserving crops
_____o. Soil improving crops
_____p. Inhibitory factors

1. Relative rate water is removed by flow over the soil surface
2. Total thickness of topsoil and subsoil down to parent material
3. Crops that prevent or retard erosion and tend to maintain rather than deplete soil organic matter
4. Conditions that hinder land and limit its capibility
5. Number of feet fall in each 100 feet
6. Classification of land according to its productive capacity and conservation treatment required to check erosion
7. Improve or replenish rather than deplete soil organic matter; improve soil structure and tilth
8. Ease with which air and water go down into the soil and return toward the surface
9. Soil directly under our feet; "A" horizon zone in which seeds are planted and cultivated
10. Layer found just below the topsoil; this layer is the "B" horizon and the storehouse for moisture and minerals
11. Amount of soil that has been removed
12. Area immediately below the subsoil; this is "C" horizon
13. Way that individual soil particles are grouped together to form clusters of particles
14. Way that soil particles hold together or resist being broken apart
15. Proportion of sand, silt, and clay in a soil mass
16. Calcareous ingredient that neutralizes acidity and supplies calcium to the soil

2. Name three reasons for judging land.

   a.

   b.

   c.

3. Name the six factors used in determining the land capability class.

   a.

   b.

   c.

   d.

   e.

   f.

4. Match the terms on the left with the statements on the right indicating slope, erosion, permeability, and soil depth.

   a. Slope

      1) _____Gently sloping
      2) _____Nearly level
      3) _____Steep
      4) _____Moderately sloping
      5) _____Very steep
      6) _____Strongly sloping

      a) Three to 5 feet fall in each 100 feet
      b) More than 12 feet fall in each 100 feet
      c) Eight to 12 feet fall in each 100 feet
      d) Five to 8 feet fall in each 100 feet
      e) Less than 1 foot fall in each 100 feet
      f) One to 3 feet fall in each 100 feet

   b. Erosion

      1) _____Severe
      2) _____None to slight
      3) _____Moderate
      4) _____Very severe

      a) Less than 25 percent surface soil removed with no gullies
      b) Seventy-five percent or more of the surface soil removed or with occasional uncrossable gullies and/or severe accumulation by wind
      c) Seventy-five percent or more of surfac soil removed or with frequent uncrossable gullies and/or severe accumulation by wind
      d) Twenty-five to 75 percent of surface soil removed with or without gullies

c. Surface runoff

1) _____Rapid
2) _____Moderate
3) _____Slow
4) _____Very slow

a) Normal runoff from soils with slopes of 1 to 3 percent; rapidly permeable soils excepted

b) Surface water flows rapidly; fields with slopes of 3 percent and above (except rapid permeability soils) would go in this catagory

c) Surface water flows away slowly; surplus water on clayey soils is an occasional problem

d) Surface water flows away very slowly; soils may remain wet for long periods of time

d. Permeability

1) _____Slow
2) _____Rapid
3) _____Very slow
4) _____Moderate

a) Soils that have sandy subsoils

b) Soils that have highly granular, clay loam subsoils

c) Soils that have dense, heavy clay or clay pan subsoils

d) Soils that have crumbly, clayey subsoils

e. Depth

1) _____Shallow
2) _____Deep
3) _____Very shallow
4) _____Moderatley deep

a) Less than 10 inches deep
b) Twenty to 36 inches deep
c) Ten to 20 inches deep
d) More than 36 inches deep

5. Name the major groups of soil in relation to texture

a. __________includes moderately coarse, medium textured, and moderately fine textures soils

b. __________includes fine-textured soils

c. __________includes coarse textured, very sandy soils

6. Describe the feeling when the following soils are rubbed by the finger

a. Loamy soils -

b. Clayey soils -

c. Sandy soils -

7. Match the capability class on the right with the correct definitions.

_____a. Soils having severe limitations that make them generally unsuited for cultivation and limits their use largely to pasture or range, woodland, or wildlife food and cover

1. Class I
2. Class II
3. Class III

_____b. Soils and land forms having limitations that preclude their use for commercial plant production and restrict their use to wildlife, recreation, water supply, or scenic purposes

_____c. Soils having severe limitations that reduce the choice of plants or require special conservation practices or both

_____d. Soils having little or no erosion hazards, but have other limitations that are impractical to remove that limits their use largely to pasture, range, woodland or wildlife food and cover; these may include very poor drainage with wet poorly drained profiles or frequently flood areas

_____e. Soils having very severe limitations that restrict the choice of plants, require very careful management, special conservation or both

_____f. Soils having some limitaitons that reduce the choice of plants or require moderate conservation practices

_____g. Soils having few limitations that restrict their use; overhead water does not change the land class; treatment is usually on adjacent soils

_____h. Soils having very severe limitations that make them unsuited for cultivation and restricts their use largely to grazing, woodland, or wildlife

8. Classify the eight land capability classes according to their proper usage by writing the class number or numbers by the statement

   a. Suited for cultivation and other uses such as grazing, forestry, or wildlife food and cover __________

   b. Land not suited for cultivation, grazing, or forestry __________

   c. Land not suited for cultivation; suited for grazing, forestry, or wildlife food and cover __________

9. Select the best land class possible for each of the following factors.

__________a. Loamy soil

__________b. Shallow depth

__________c. Slow permeability

__________d. Strongly sloping

__________e. Severe erosion

__________f. Very slow surface runoff

10. Select the recommended land treatments for Class V land that has an overhead water problem and soil test indicates a acid soil by placing "X" in the blank to the left.

Vegatative

_____a. Use soil conserving and/or soil improving crops every fourth or fifth year

_____b. Use soil conserving and/or soil improving crops every third or fourth year

_____c. Use soil conserving and/or soil improving crops every second year

_____d. Use soil conserving and/or soil improving crop every year

_____e. Do not burn crop residue

_____f. Use residue management and/or minimum tillage

_____g. Establish recommended grass or grasses and legumes

_____h. Use proper pasture and range management

_____i. Protect land from burning

_____j. Use control grazing

_____k. Plant recommended trees

_____l. Harvest trees selectively

_____m. Use only for wildlife or recreation area

Mechanical

_____n. Control brush or trees

_____o. Terrace and farm on contour

_____p. Maintain terraces

_____q. Construct diversion terraces

_____r. Install drainage system

_____s. Control gullies

_____t. No mechanical treatment needed

Fertilizer and soil amendments

_____u. Lime

_____v. Phosphate (P)

_____w. Potash (K)

_____x. Nitrogen (N)

_____y. Nitrogen, phosphate, and potash (NPK)

11. Circle the letter of the soil amendment that would be made to land that was highly acid.

    a. Nitrogen

    b. Nitrogen and potash

    c. Lime

12. List the two combinations which with gently sloping lower the land capability class.

    a.

    b.

13. Apply the following land class factors and field conditions to the judging score card.

    a. Texture--When rubbed between the fingers the soil feels sticky

    b. Permeability--Crumbly, clayey subsoil

    c. Depth--Eighteen inches

    d. Slope--Six inch fall in each 100 feet

    e. Erosion--Twenty percent of topsoil removed, no gullies

    f. Surface drainage--Surplus water is an occasional problem

    g. Soil test show deficiencies in potash

    h. No mechanical treatment needed

LAND JUDGING SCORE CARD

LJ-1

(Indicate your answer by an X in the square with number.)

Contestant No. ____________

Field No. ____________

Name ____________

Address ____________

FFA ____________
Chapter County

4-H ____________
Club County

PART I—LAND CLASS FACTORS

SCORE

A. SURFACE TEXTURE
☐ 1. Sandy soils
☐ 2. Loamy soils
☐ 3. Clayey soils

B. PERMEABILITY
☐ 1. Rapid
☐ 2. Moderate
☐ 3. Slow
☐ 4. Very slow

C. DEPTH OF SOIL
☐ 1. Deep
☐ 2. Moderately deep
☐ 3. Shallow
☐ 4. Very shallow

D. SLOPE
☐ 1. Nearly level
☐ 2. Gently sloping
☐ 3. Moderately sloping
☐ 4. Strongly sloping
☐ 5. Steep
☐ 6. Very steep

E. EROSION—WIND & WATER
☐ 1. None to slight
☐ 2. Moderate
☐ 3. Severe
☐ 4. Very severe

F. SURFACE RUNOFF
☐ 1. Rapid
☐ 2. Moderate
☐ 3. Slow
☐ 4. Very slow

G. MAJOR FACTORS — That keep area out of Class I:
☐ 1. Texture
☐ 2. Permeability
☐ 3. Depth
☐ 4. Slope
☐ 5. Erosion
☐ 6. Runoff
☐ 7. Wetness
☐ 8. Flooding
☐ 9. None

H. LAND CAPABILITY CLASS
☐ 1. Class I
☐ 2. Class II
☐ 3. Class III
☐ 4. Class IV
☐ 5. Class V
☐ 6. Class VI
☐ 7. Class VII
☐ 8. Class VIII

PART II—RECOMMENDED LAND TREATMENTS— Needed for land capability classes

SCORE

VEGETATIVE

Use soil conserving and/or soil improving crops:
☐ 1. Every 4th or 5th year.
☐ 2. Every 3rd or 4th year.
☐ 3. Every 2nd year.
☐ 4. Every year.

☐ 5. Do not burn crop residue.
☐ 6. Residue management and/or minimum tillage.
☐ 7. Establish recommended grass or grasses and legumes.
☐ 8. Proper pasture and range management.
☐ 9. Protect from burning.
☐ 10. Control grazing.
☐ 11. Plant recommended trees.
☐ 12. Harvest trees selectively.
☐ 13. Use only for wildlife or recreation area.

MECHANICAL
☐ 14. Control brush or trees.
☐ 15. Terrace and farm on contour.
☐ 16. Maintain terraces.
☐ 17. Construct diversion terraces.
☐ 18. Install drainage system.
☐ 19. Control gullies.
☐ 20. No mechanical treatment needed.

FERTILIZER & SOIL AMENDMENTS
☐ 21. Lime
☐ 22. Phosphate (P)
☐ 23. Potash (K)
☐ 24. Nitrogen (N)
☐ 25. Fertilizer or soil amendments not needed.

____________ SCORE PART I (Possible 40)

____________ SCORE PART II (Possible 30)

TOTAL SCORE (Possible 70) ____________

Cooperative Extension Service, Kansas State University, Manhattan, Kansas

LAND JUDGING
UNIT I

ANSWERS TO TEST

1. a. 11
   b. 12
   c. 8
   d. 10
   e. 9
   f. 14
   g. 15
   h. 13
   i. 1
   j. 2
   k. 16
   l. 5
   m. 6
   n. 3
   o. 7
   p. 4

2. Any three of the following:

   a. Aids in the understanding and importance of basic soil differences as they affect crop production and erosion

   b. Helps to determine management practices important to proper use of soil and water

   c. Develops understanding of different soil and water conservation

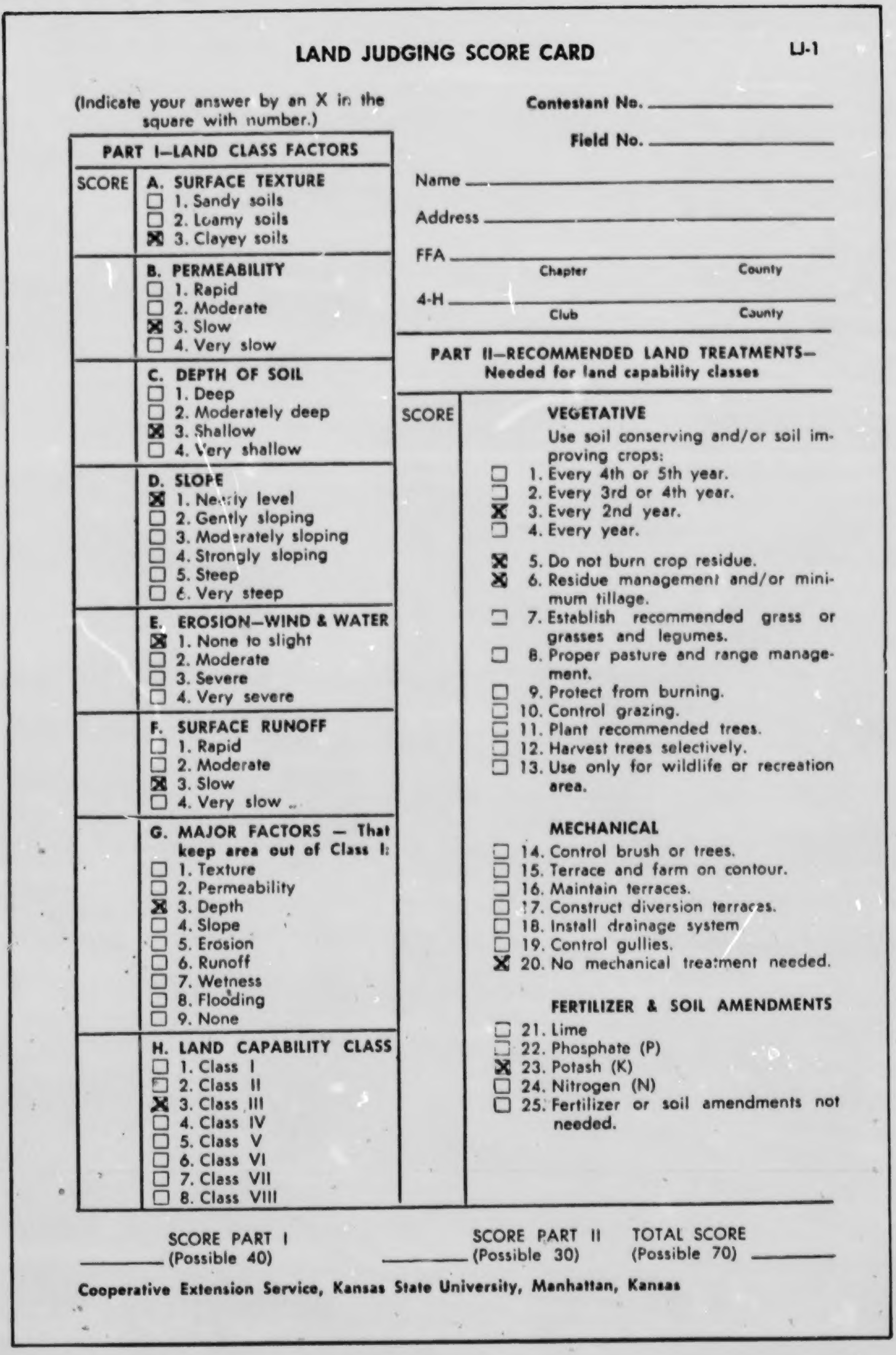
   d. Aids in understanding the influence of land features on production and land protection

3. a. Surface texture
   b. Permeability
   c. Depth of soil
   d. Slope
   e. Erosion
   f. Surface runoff

4. a. 1) f)
      2) e)
      3) c)
      4) a)
      5) b)
      6) d)
   b. 1) b)
      2) a)
      3) d)
      4) c)
   c. 1) b)
      2) a)
      3) c)
      4) d)
   d. 1) d)
      2) a)
      3) c)
      4) b)
   e. 1) c)
      2) d)
      3) a)
      4) b)

5. a. Loamy soil
   b. Clayey soil
   c. Sandy soil
6. a. Loamy soil--Has a touch of velvet or feel of wheat flour
   b. Clayey soil--Sticky feeling when rubbed between fingers
   c. Sandy soil--Rough, gritty, feeling
7. a. 6
   b. 8
   c. 3
   d. 5
   e. 4
   f. 2
   g. 1
   h. 7
8. a. I, II, III, IV
   b. VIII
   c. V, VI, VII
9. a. I
   b. III
   c. I
   d. IV
   e. VI
   f. II
10. g
    h
    i
    j
    q
    r
    u
11. c
12. a. Very Slow permeability
    b. Moderate erosion

13. Part I



LAND JUDGING SCORE CARD

LJ-1

(Indicate your answer by an X in the square with number.)

Contestant No. __________
Field No. __________

Name __________
Address __________
FFA __________ Chapter __________ County
4-H __________ Club __________ County

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- ☐ 7. Wetness
- ☐ 8. Flooding
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PART II—RECOMMENDED LAND TREATMENTS— Needed for land capability classes

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- ☐ 18. Install drainage system
- ☐ 19. Control gullies.
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FERTILIZER & SOIL AMENDMENTS
- ☐ 21. Lime
- ☐ 22. Phosphate (P)
- ☒ 23. Potash (K)
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__________ SCORE PART I (Possible 40)
__________ SCORE PART II (Possible 30)
TOTAL SCORE (Possible 70) __________

Cooperative Extension Service, Kansas State University, Manhattan, Kansas

FERTILIZERS
UNIT II

TERMINAL OBJECTIVE

After completion of Unit II, the student should be able to identify deficiency symptoms of the major plant nutrients while observing the growing plant. He should be able to take soil test information or plant growth information and determine the amount of fertilizer to use. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the post test.

SPECIFIC OBJECTIVES

After completion of instruction, the student should be able to:

1. Match terms associated with fertilizers to the correct definition.
2. Name five factors that influence the use of fertilizers.
3. Name the sixteen elements known to be essential for plant growth and name the correct chemical symbol for each.
4. Name the three major (primary) plant nutrients and name three characteristics of each.
5. Name three minor (secondary) plant nutrients and name three characteristics of each.
6. Name three micro-elements necessary for plant growth which are usually found in sufficient quantity in most soils.
7. Name the requirements that must be stamped on fertilizer bags according to state law.
8. Classify fertilizers according to ordinary, high analysis, or concentrated.
9. Define dry, liquid, and gas fertilizers.
10. Discuss in a short paragraph what 20-10-10 means according to fertilizer analysis.
11. Match hunger signs of plants with examples of their plant food.
12. Identify the parts of the pH scale and, by reading soil test information, determine if the soil is acid, neutral, or alkaline.
13. Name three ways liming benefits plant growth.
14. Name three factors that determine the amount of lime needed.
15. Match plants to the most desirable pH scale range.
16. Classify fertilizers according to their percent nutrient value from the highest percent to the lowest.
17. Name four factors to consider in caring for fertilizer equipment.
18. Name three factors to consider in storing fertilizers.

19. Match description of fertilizer application with methods of field applications.
20. Calculate problems comparing the cost per pound of nitrogen for each fertilizer.
21. Calculate problems determining application rates of fertilizers.
22. Calculate problems determining rate of the lime application.
23. Demonstrate the ability to interpret a soil test and recommend the fertilizer to use and the amount.

FERTILIZERS
UNIT II

SUGGESTED ACTIVITIES

I. Instructor:
   A. Provide students with objective sheet.
   B. Provide students with information and assignment sheets.
   C. Make transparencies.
   D. Discuss terminal and specific objectives.
   E. Discuss information and assignment sheets.
      1. Present colored slides and hunger signs of crops.
      2. Supply analysis of commercial fertilizers available to local students.
      3. Submit to student an example of a local soil test and have them calculate fertilizer recommendations and lime requirements.

II. Students:
   A. Read objectives.
   B. Study information sheets.
   C. Work assignment sheets and turn in to instructor for grading.
   D. Participate in field trip.
   E. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:
   A. Objectives
   B. Information sheets
   C. Fertilizer Recommendation Guide
   D. Transparency masters
      1. TM 1 - Essential Elements
      2. TM 2 - Required Fertilizer Bag Information
      3. TM 3 - Fertilizer Analysis
      4. TM 4 - pH Scale
      5. TM 5 - Early and Modern methods of applying fertilizers.
      6. TM 6 - Banding and topdressing

    7. TM 7 - Sidedressing and Broadcasting
    8. TM 8 - Water, Foliage, Aerial Applications

E. Assignment Sheets

    1. Assignment Sheet #1 - Calculate Cost Per Pound of Nitrogen for Different Fertilizer Analysis
    2. Assignment Sheet #2 - Calculate Application Rates of Fertilizers
    3. Assignment Sheet #3 - Make Fertilizer Recommendations
    4. Assignment Sheet #4 - Calculating Liming Rate

F. Answers to assignment sheets

G. Job Sheet

    1. Job Sheet #1 - Interpreting Soils Test Recommendations for Nitrogen

H. Test

I. Answers to test

II. References:

A. McVickar, Malcolm H. Using Commercial Fertilizers. Danville, Illinois: The Interstate Printers and Publishers, Inc.

B. Cook, R.L. Soil Management. New York: John Wiley and Sons, Inc.

C. Soil Test Interpretations and Fertilizer Recommendations. Cooperative Extension Service, Kansas State University, Manhattan, Kansas

D. Fertilizing Dryland Grain Sorghum. Cooperative Extension Service, Kansas State University, Manhattan, Kansas SB-579

E. Fertilizing Dryland Wheat. Cooperative Extension Service, Kansas State University, Manhattan, KS SB-590

FERTILIZERS
UNIT II

INFORMATION SHEET

I. Terms and definitions

- A. Formula - The quantity and grade of materials used in making a fertilizer mixture.
- B. Fertilizer - Any natural manufactured or processed material or mixture of materials that contains one or more of the recognized plant food elements, either liquid of dry.
- C. Ratio - The ratio of nitrogen, phosphate, and potash in a fertilizer
- D. Grade - The total of the fertilizer analysis.
- E. Analysis - The percent content of total (N) nitrogen available; (P) phosphorus expressed as P_2O_5 and the amount of water soluble (K) potassium expressed as K_2O.
- F. Brand - Trademark of the company which produced the fertilizer
- G. Carrier - A fertilizer containing only one nutrient
- H. Complete fertilizer - One which supplies all three of the major nutrients.
- I. Mixed fertilizer - A mixture of two carriers.
- J. Filler - The material added for weight to the fertilizer which does not contain N, P_2O_5 or K
- K. Conditioner - The material added to the fertilizer in order to improve its physical condition
- L. Acid soil - The soil having an acid reaction; the pH is below 7.0
- M. Alkali soil - The soil that contains enough exchangeable sodium to adversely affect the growth of most crops.
- N. Alkaline soil - The soil having a basic reaction; the pH is above 7.0
- O. Organic soil - A term used to refer to soils containing 20% or more organic matter

  (NOTE: Average of most Kansas soils is 5%.)
- P. pH - A term used to indicate the degree of acidity or alkalinity of the soil.
- Q. Yield possibility - The yield obtained for a given cropping situation when all nutrients are adequate
- R. Percent sufficient - The percent of the yield possibility obtained because of the deficiency of a plant nutrient

- S. Primary nutrients - The three major plant nutrients N, P, K
- T. Secondary nutrients - Three minor plant nutrients (calcium, magnesium, and sulfur)
- U. Effective calcium carbonate (ECC) - The neutralizing capacity of Ag lime in relation to pure 100% calcium carbonate

II. Factors influencing use of fertilizers
- A. Crops
  - 1. Value
  - 2. Leaching of nitrogen
  - 3. Absorbing ability
- B. Chemical condition of soil
  - 1. Availability of total nutrients
  - 2. Availability of nutrients
- C. Physical condition of soil
  - 1. Moisture content
  - 2. Soil texture (aeration)
- D. Insects and diseases
- E. Climatic conditions

III. Essential elements (Transparency 1)
- A. Carbon - C
- B. Hydrogen - H
- C. Oxygen - O
- D. Nitrogen - N
- E. Phosphorus - P
- F. Potassium - K
- G. Calcium - Ca
- H. Magnesium - Mg
- I. Sulfur - S
- J. Iron - Fe
- K. Zinc - Zn
- L. Manganese - Mn
- M. Copper - Cu
- N. Boron - B
- O. Molybdenum - Mo
- P. Chloride - Cl

IV. Characteristics of major plant nutrients
  A. Nitrogen
    1. Part of every living cell
    2. Part of the chlorophyl molecule
    3. Gives dark green color
    4. Aids and promotes seed development
    5. Easily translocated
  B. Phosphorus
    1. Part of every living cell
    2. Contributes to early maturing of crops
    3. Necessary for seed formation
    4. Stimulates root growth
    5. Easily translocated
  C. Potassium
    1. Necessary for production and translocation of carbohydrates
    2. Aids in respiration
    3. Controls water intake and respiration
    4. Easily translocated
    5. Promotes health and vigor of plants
    6. Stiffens straw and stalks

V. Characteristics of minor plant nutrients
  A. Calcium
    1. Speeds decay of organic matter
    2. Stimulates formation of nitrates
    3. Promotes root and leaf growth
    4. Necessary for nodulation of legumes
  B. Magnesium
    1. Necessary for chlorophyl or green coloring
    2. Increases absorption of phosphorus
    3. Aids in formation of fats and oils
    4. Important in plant enzyme system
  C. Sulfur
    1. Necessary for nodule formation on legumes
    2. Associated with plant enzyme systems
    3. Easily translocated

VI. Micro-elements
  A. Manganese
  B. Boron

C. Copper

D. Zinc

E. Iron

F. Molybdenum

G. Chloride

VII. Fertilizer bag requirements (Transparency 2)

A. Name, brand, or trademark

B. Analysis (guaranteed or chemical composition)

C. Net weight

D. Name and address of manufacturer

VIII. Fertilizer classification

A. Ordinary - Less than 20% plant food

B. High analysis - 20 to 30% plant food

C. Concentrated - Over 30% plant food

D. Examples

1. 0-20-0 - High
2. 20-20-20- - Concentrated
3. 82-0-0 - Concentrated
4. 5-10-0 - Ordinary

IX. Fertilizers

A. Dry mixed - A granulated fertilizer made by combining selected plant food material to obtain certain ratios and quantities of plant nutrients.

B. Liquid - A liquid fertilizer made by dissolving the correct proportion of the solid plant food carriers into water or by the neutralization process of neutralizing phosphoric acid with ammonia.

C. Gas - A liquid fertilizer containing solid fertilizer materials which is dispersed under pressure and usually contains a higher analysis than clear liquid mixes.

X. Fertilizer analysis (Transparency 3)

A. Consists of three figures

(NOTE: These three figures indicate the plant nutrient content of the material.)

B. First figure - Represent pounds of total nitrogen available in 100 pounds of fertilizer

C. Second figure - Represents pounds of total phosphorus available expressed as P_2O_5

D. Third figure - Represents pounds of water soluable potash expressed as K_2O

E. Example - 100 pounds of 20-10-10 fertilizer
    1. 20 pounds of total nitrogen
    2. 10 pounds of available phosphate
    3. 10 pounds of water soluable potash

XI. Hunger signs of plants
  A. Nitrogen
    1. Stunted and spindly
    2. Yellowish-green foliage
    3. Older leaves affected first
    4. Leaf margins remain green
  B. Phosphorus
    1. Stunted growth
    2. Abnormally green appearance
    3. Leaves become purple in advanced stages
    4. Older leaves affected first
  C. Potassium
    1. Shorter plants
    2. General loss of green color
    3. Leaf margins affected first
  D. Magnesium
    1. General yellowing
    2. Older leaves affected first
    3. Leaves become reddish-purple in advanced stages, expecially leaf edges
    4. Veins remain green
    5. Leaves may curl downward

XII. pH scale (Transparency 4)
  A. Acid - 0 to 6.9
  B. Neutral - 7.0
  C. Alkaline - 7.1 to 14.0

(NOTE: The pH scale is divided into 14 divisions or pH units. Soils with a pH value of 7.0 are neutral; those with a value below 7.0 are said to be acid, while those above 7.0 are alkaline. A pH of 5.0 is 10 times more acid than a pH of 6.0, and a pH of 4.0 is 10 times as acid as pH 5.0, or 100 times as acid as one with a pH of 6.0. The pH value of most soils falls in the range between 4.0 and 8.0. A pH of about 6.5 is considered desirable for most plants.)

XIII. Liming effects on plant growth
- A. Corrects soil acidity
- B. Reduces solubility of toxic elements
- C. Supplies calcuim and magnesium
- D. Improves biological activity
- E. Improves physical condition of soil
- F. Makes fertilizers more effective and efficient
- G. Improves yields

XIV. Amount of lime needed depends on several factors
- A. Amount of clay (texture)
- B. Type of clay (structure)
- C. Organic Matter

XV. Desirable plant pH scale
- A. Strongly acid 5.0 to 5.5
  1. Potatoes
  2. Watermelons
- B. Medium and moderately acid 5.5 to 6.5
  1. Soybean
  2. Corn
  3. Wheat
  4. Sorghum
  5. Vetch
  6. Oats
  7. Rye
  8. Millet
  9. Sudangrass
  10. Cotton
  11. Peanuts
  12. Bermudagrass
- C. Slightly acid - slightly alkaline 6.5 to 7.5
  1. Alfalfa
  2. Sweet clover

XVI. Fertilizer nutrient value classification

A. Nitrogen

1.	Anhydrous ammonia	82%	82-0-0 grade
2.	Urea	45%	45-0-0 grade
3.	Ammonia nitrate	33%	33-0-0 grade
4.	Ammonia sulfate	21%	21-0-0 grade
5.	Urian	28%	28-0-0 grade

B. Phosphate

1.	Phosphoric acid	50-54%	0-54-0 grade
2.	Cons. Superphosphate	44-48%	0-45-0 grade
3.	Ammonium phosphate	35-50%	18-46-0 grade
4.	Rock phosphate	30-34%	
5.	Nitric phosphate	10-20%	many grades

C. Potash (Potassium)

1.	Muriate of potash	60-63%	0-0-60 grade
2.	Potassium sulfate	50-53%	0-0-50 grade
3.	Potassium nitrate	44-46%	13-0-44 grade

XVII. Care of fertilizer equipment

A. Remove all fertilizer from hopper after use
B. Clean hopper thoroughly with water
C. Allow hopper to dry
D. Apply a mixture of 50% kerosene to hopper

XVIII. Storage of fertilizer

A. Store in a dry location
B. Do not stack in direct contact with walls
C. Do not stack directly on concrete floor

(NOTE: If storage location has a concrete floor, use lumber and construct a false floor.)

XIX. Application of fertilizers (Transparencies No. 5, 6, 7, 8)

A. Banding

1. Band of fertilizer placed 2 to 3 inches to the side of the seed.
2. Band of fertilizer placed 3 to 6 inches below the seed
3. Increases the efficiency of phosphorus

B. Topdressing

1. Nutrients are supplied to small grains, legumes and grasses by drilling them into the topsoil.
2. A drill attachment is used to supply fertilizer
3. Top dressing small grains is similar to side dressing row crops.

C. Sidedressing

1. Restricted to the application of nitrogen and potassium.
2. Fertilizer can be applied 2-4 after planting.
3. Apply between rows usually the same time as first cultivation

D. Broadcasting

1. Fertilizer is applied uniformly over the surface of the land
2. Apply before planting
3. Can be incorporated into the soil by disking
4. Decreases the efficiency of phosphorus

E. Applying in Irrigation Water

1. Fertilizer is metered into irrigation water for even distribution
2. Efficient process of applying nitrogen
3. Not recommended for phosphorus because it tends to remain on the surface

F. Foliage Spray

1. Nutrients are deposited by a liquid/spray on the leaves of the plants
2. Satisfactory for applying most trace elements
3. Not recommended for major element due to the large amount needed by the plant

G. Aerial Application

1. Fertilizer is applied by airplane
2. Considered a form of broadcast application
3. Useful in area with rough or wet land and forests
4. Usually coarse, granular or pelleted material is used for aerial distribution.

XX. Calculating cost of nitrogen

A. Multiply percent nitrogen x 2000 lbs/per ton

B. Divide pounds of nitrogen in one ton into the cost per ton

C. Example ($68.00 per ton)

$$\begin{array}{rl} 33.0\% & \text{nitrogen in 100 pounds} \\ \times\ 20 & \text{100-pound bags in a ton} \\ \hline 660.0 & \text{pounds of nitrogen in one ton} \end{array}$$

$$660 \overline{)\,68.00}^{\;.1030} = \text{10.3 cents per pound}$$

XXI. Calculating application rates

A. Determine pounds of nutrient needed

B. Divide by percent of nutrient in fertilizer

C. Example

$$\frac{\text{40 lbs. of K20 Needed}}{\text{50 percent K20 in fertilizer}} = \text{80 lbs. of 0-0-50 needed per acre}$$

XXII. Calculating Liming Rate

A. Obtain recommended lime requirement from soil test.

(NOTE: Soil test is the only accurate method of determining lime needs. A basic pH test should not be used to compute lime requirements, but can indicate the need for an accurate soil test and lime requirement analysis from official soil testing laboratories.)

B. Obtain the percent effective calcium carbonate (ECC) at time to be used.

C. Example

Soil test - 6000 pound of ECC Lime dealer's guarantee - 60 percent ECC

$$\frac{6000}{.60} = \text{10,000 pounds or 5 tons per acre Ag lime application}$$

Ag. III - 45-A

K.S.U. FERTILIZER RECOMMENDED GUIDE

NITROGEN

Crop	Area of State	Medium and Fine Textured Soils		Sandy Soils	Irrigated
		Fallowed	Continuous Cropped		
			Pounds of Nitrogen Per Acre		
Corn[1]	Entire[2]		100-200	100-200	160-220
Sorghum[1]	Eastern		80-160	80-160	120-180
	Central[2]	30-60	40-80	40-80	120-180
	Western	0-40		30-40	120-180
Wheat[4]	Eastern		40-70	40-70	50-80
	Central	20-40	30-60	40-60	50-80
	Western	0-40		25-50	50-80
Soybeans	Entire	None	None	None	None
Established Stand					
Grasses[5] (Cool Season)	Eastern		80-120	80-120	125-200
	Central		40-80	40-80	125-200
	Western				125-200
Legumes	Entire	None	None	None	None
New Seeding					
Grasses (Cool Season)	Entire		30-40	30-40	30-40
Legumes	Entire	None	10-20	10-20	10-20
Sugar Beets	Western				80-120
Dry Beans	Western	None	None	0-30	0-60
Bermuda	Southeast		200-300		

1. These recommendations are for both grain and silage production.
2. Dryland corn is not recommended in Central and Western Kansas.
3. Recommendations based on having a good subsoil moisture supply at planting time (greater than 3 feet). If subsoil moisture is low at planting, then N rates shown for western Kansas under dryland conditions should be reduced.
4. If extensive pasturing of wheat is done, then add 20 to 30 pounds of nitrogen to recommendations.
5. If extensive use of fall grazing is planned, then an additional application of half the rate shown should be made in August.

PHOSPHORUS

Crop	Area of State	Soil Test Level (pp2m or lbs/A P)[1]				
		Very Low (0-10)	Low (11-25)	Medium (26-50)	High (51-100)	Very High (100 or more)
			Pounds of P_2O_5 Per Acre			
Corn[2]						
Irrigated	Entire	60-80	40-60	20-40	0-20	None
Non-irrigated	Eastern	40-60	20-40	0-20	None	None
Sorghum[2]						
Irrigated	Entire	50-70	30-50	20-30	0-20	None
Non-irrigated	Eastern	40-50	20-40	0-20	None	None
	Central	30-40	20-30	0-20	None	None
	Western	20-30	0-20	None	None	None
Wheat						
Irrigated	Entire	50-60	30-50	10-30	None	None
Non-irrigated	Eastern	40-60	20-40	10-20	None	None
	Central	30-40	20-30	0-20	None	None
	Western	20-30	0-20	None	None	None
Soybeans	Entire	30-40	20-30	0-20	None	None
Established Stands						
Grasses						
Non-irrigated	Eastern	40-50	30-40	0-30	None	None
	Central	30-40	20-30	0-20	None	None
Irrigated	Entire	50-60	40-50	20-40	0-20	None
Legumes						
Non-irrigated	Entire	40-60	30-40	20-30	0-20	None
Irrigated	Entire	60-80	40-60	20-40	0-20	None
New Seeding						
Grasses	Entire	60-80	40-60	20-40	None	None
Legumes	Entire	80-100	60-80	40-60	20-40	None
Sugar Beets	Western	80-100	60-80	40-60	20-40	0-20
Dry Beans	Western	40-50	20-40	0-20	None	None
Bermuda	Southeast	60-80	40-60	20-40	0-20	None

1. Soils extracted with 0.025 N HCl in 0.03 N NH_4F using a 1:10 soil to solution ratio.
2. These recommendations are for both grain and silage production.

POTASSIUM

			Pounds of K_2O Per Acre			
Crop	Area of State	Very Low (0-80)	Low (81-160)	Medium (161-240)	High (241-320)	Very High (321 or more)
				lbs/A K_2O		
Corn[2]						
Irrigated	Entire	80-100	60-80	40-60	20-40	None
Non-irrigated	Eastern	60-80	40-60	20-40	0-20	None
Sorghum[2]						
Irrigated	Entire	80-100	60-80	40-60	20-40	None
Non-irrigated	Central & Western	50-70	30-50	10-30	None	None
	Eastern	60-80	40-60	20-40	0-20	None
Wheat	Eastern	40-60	20-40	0-20	None	None
	Central	30-40	20-30	0-20	None	None
	Western	20-30	10-20	0-10	None	None
Soybeans	Entire	60-80	40-60	20-40	0-20	None
Established Stands						
Grasses						
Non-irrigated	Entire	40-50	30-40	20-30	0-20	None
Irrigated	Entire	50-60	40-50	20-40	0-20	None
Legumes						
Non-irrigated	Entire	80-100	50-80	30-50	0-30	None
Irrigated	Entire	80-100	60-80	40-60	20-40	None
New Seeding						
Grasses	Entire	80-100	60-80	30-60	0-30	None
Legumes	Entire	100-120	80-100	40-80	20-40	None
Sugar Beets	Western	80-100	60-80	40-60	0-40	None
Dry Beans	Western	40-60	20-40	0-20	None	None
Bermuda	Southeast	100-120	80-100	40-80	20-40	None

1. Soils extracted with 1 N ammonium acetate using a 1:5 soil to solution ratio.
2. If corn or sorghum is used for silage, then add 40 pounds of K_2O to recommendations.

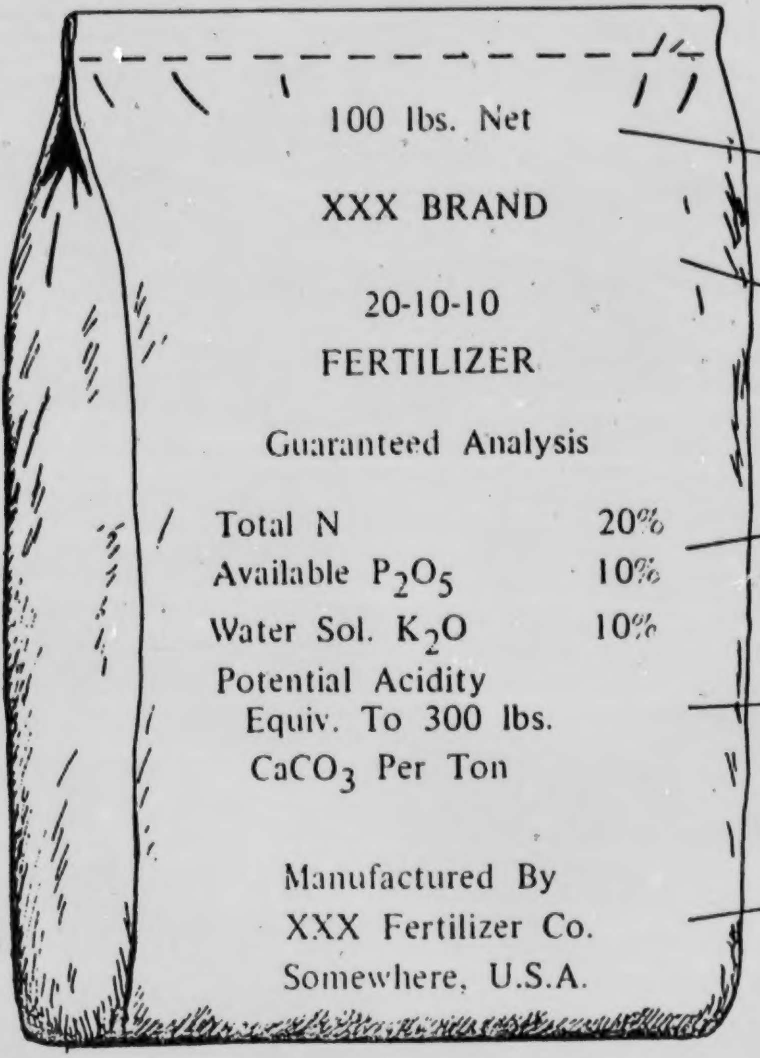
Essential Elements

NON-MINERAL	PRIMARY	SECONDARY
Carbon	Nitrogen	Calcium
Hydrogen	Phosphorus	Magnesium
Oxygen	Potassium	Sulfur

MICRO-ELEMENTS

Iron	Boron	Zinc
Chloride		Copper
Manganese		Molybdenum

Required Fertilizer Bag Information



100 lbs. Net

XXX BRAND

20-10-10
FERTILIZER

Guaranteed Analysis

Total N	20%
Available P_2O_5	10%
Water Sol. K_2O	10%

Potential Acidity
Equiv. To 300 lbs.
$CaCO_3$ Per Ton

Manufactured By
XXX Fertilizer Co.
Somewhere, U.S.A.

Lbs. per Bag

Name or Brand of Fertilizer

Chemical Composition Guaranteed

Acid Forming Tendency

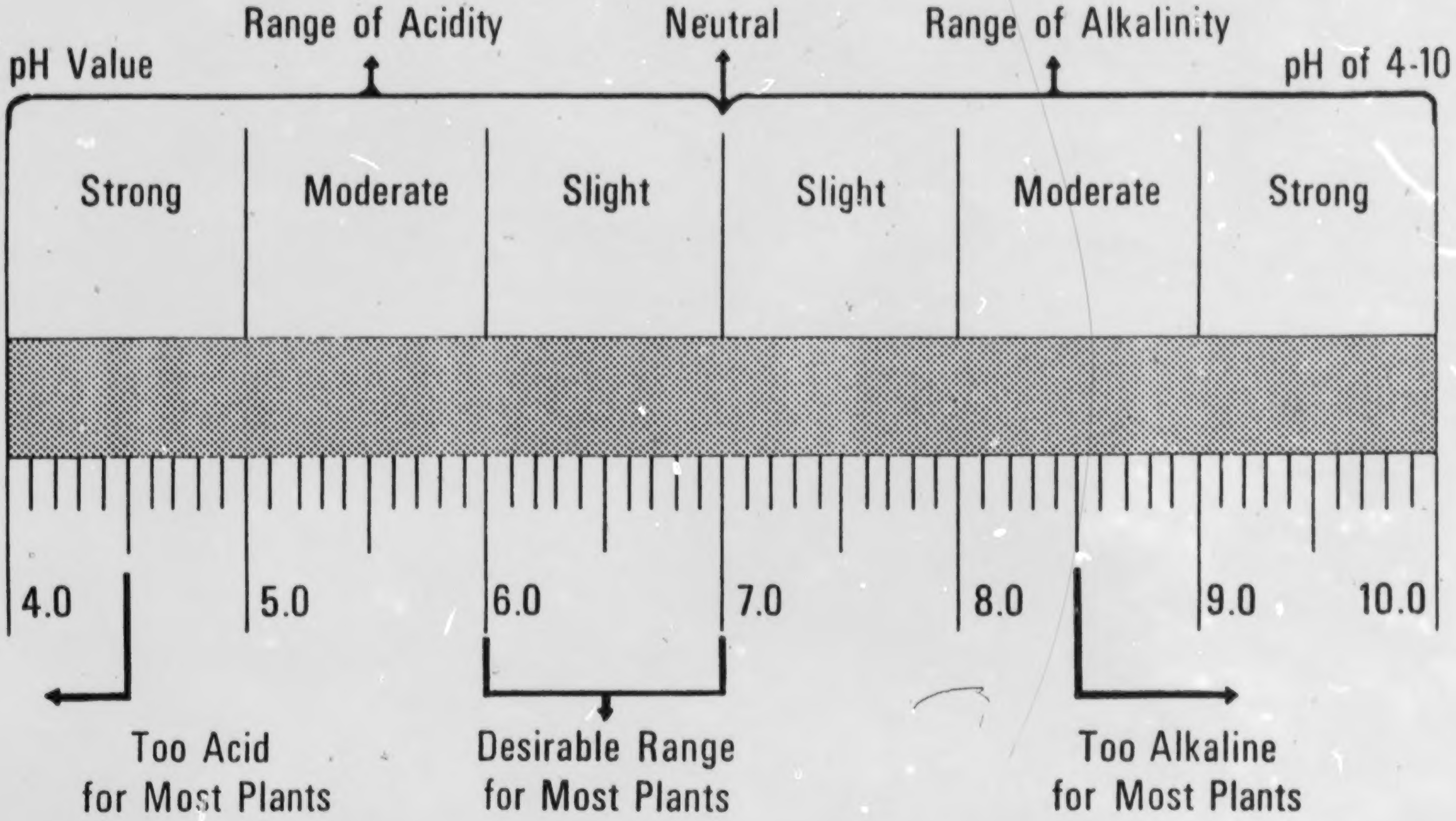
Name and Address of Manufacturer

Fertilizer Analysis

20 – 10 – 10

↑	↑	↑
Total Nitrogen Available	Total Phosphorus Expressed as P_2O_5	Water Soluble Potash Expressed as K_2O

pH Scale



pH Value

Range of Acidity

Neutral

Range of Alkalinity

pH of 4-10

Strong

Moderate

Slight

Slight

Moderate

Strong

4.0

5.0

6.0

7.0

8.0

9.0

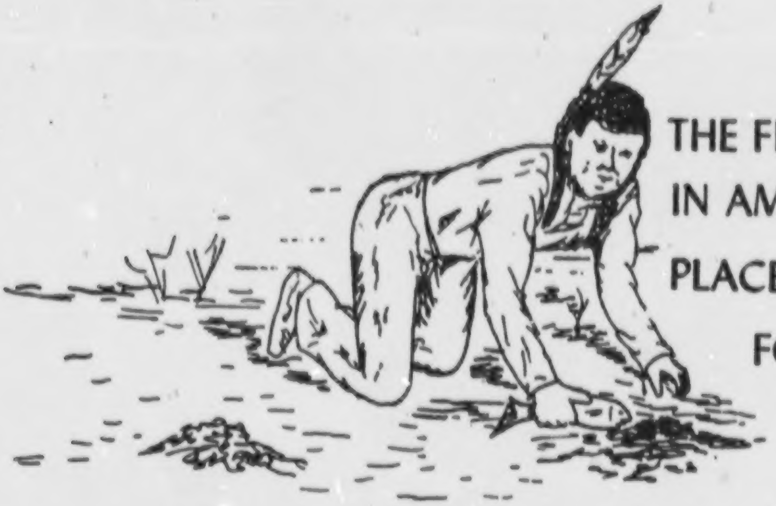
10.0

Too Acid
for Most Plants

Desirable Range
for Most Plants

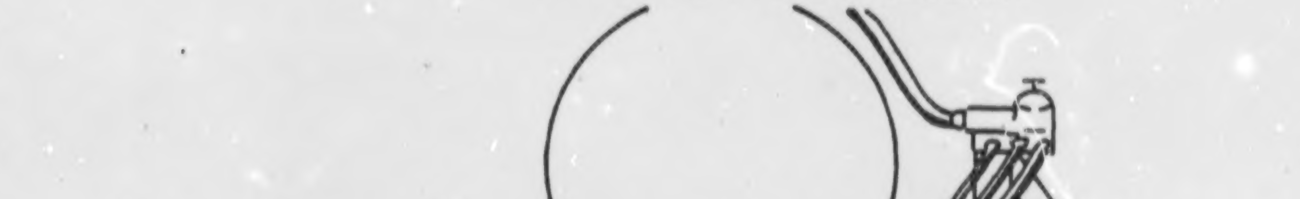
Too Alkaline
for Most Plants

AN EARLY METHOD OF APPLYING FERTILIZER IN AMERICA



THE FIRST USE OF FERTILIZER IN AMERICA, A FISH WAS PLACED IN THE HILL FOR CORN

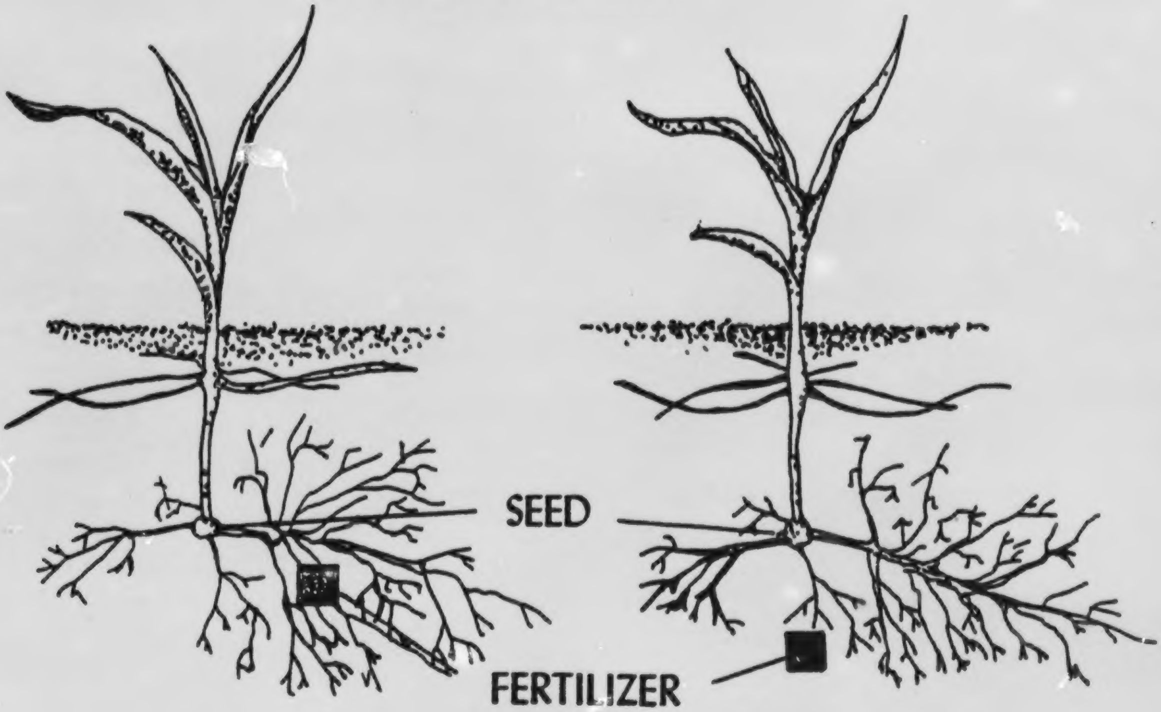
ONE OF THE MODERN METHODS USED TO APPLY FERTILIZER


APPLICATOR KNIFE
SOIL SURFACE
GAS

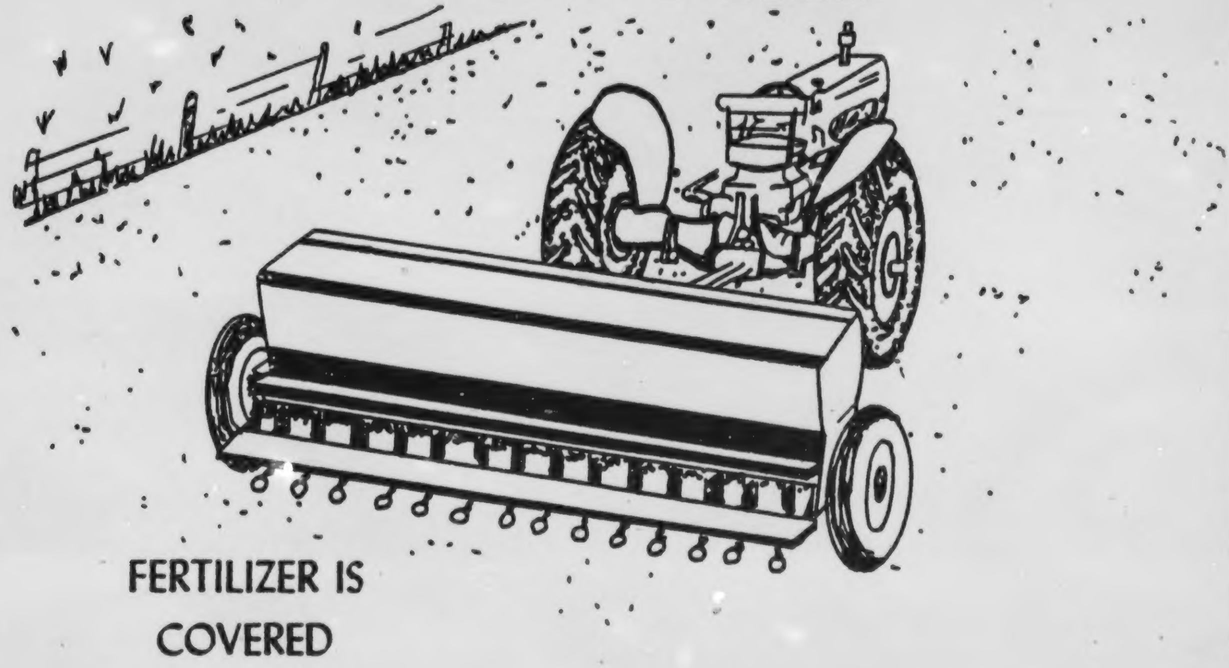
ANHYDROUS AMMONIA APPLICATOR

APPLICATION OF FERTILIZER

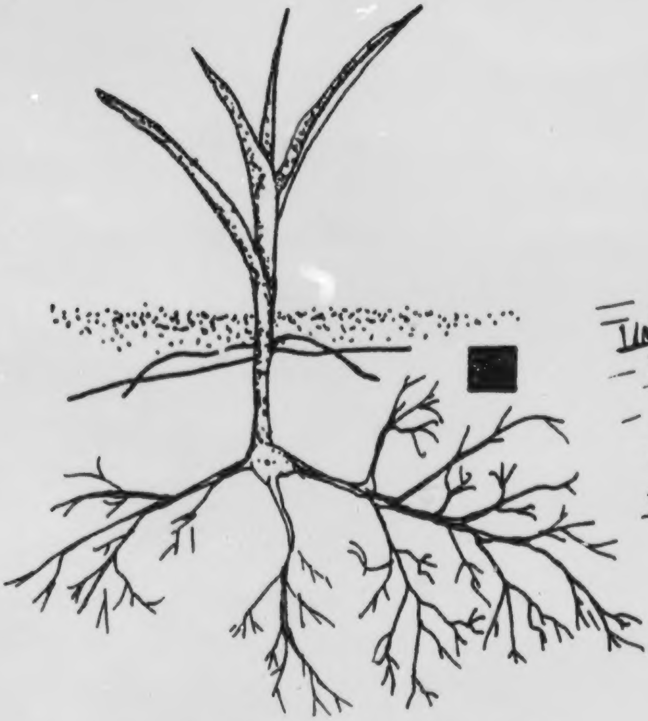
BAND OF FERTILIZER


SEED
FERTILIZER

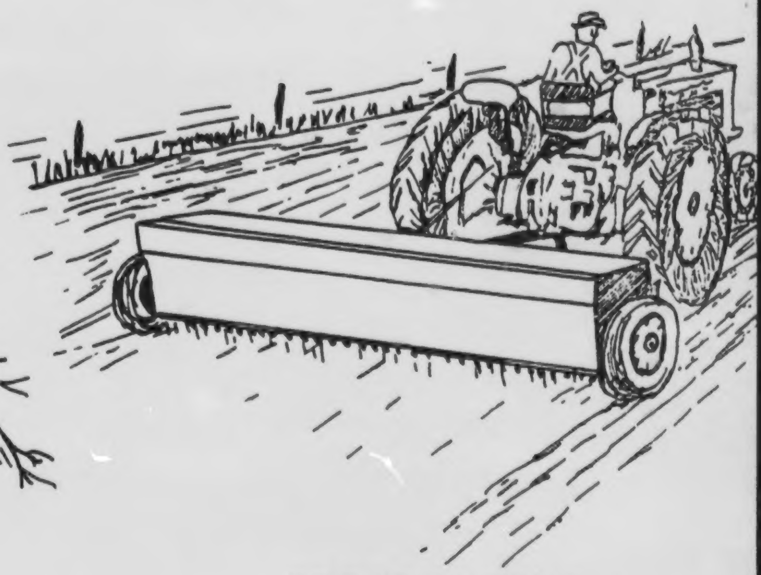
TOP-DRESSING FERTILIZER


FERTILIZER IS COVERED

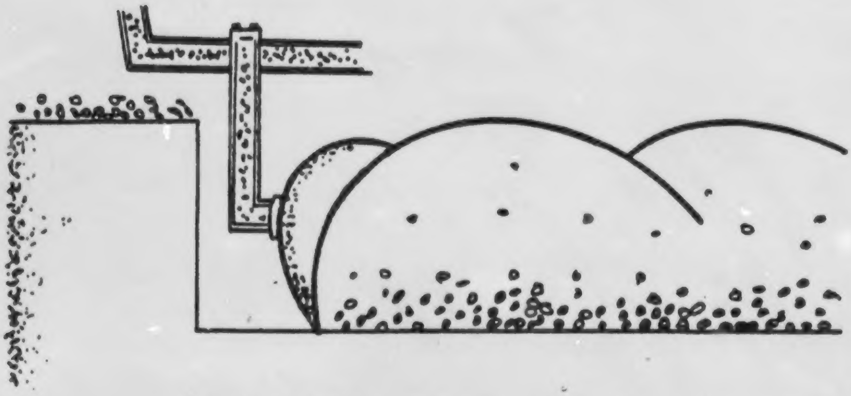
APPLICATION OF FERTILIZER



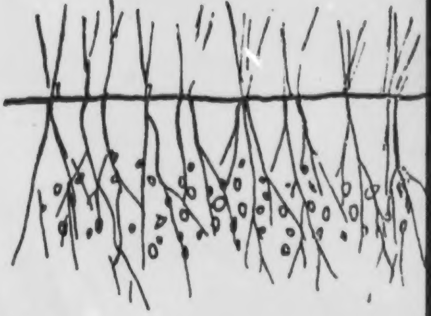
SIDE-DRESSING FERTILIZER



BROADCASTING

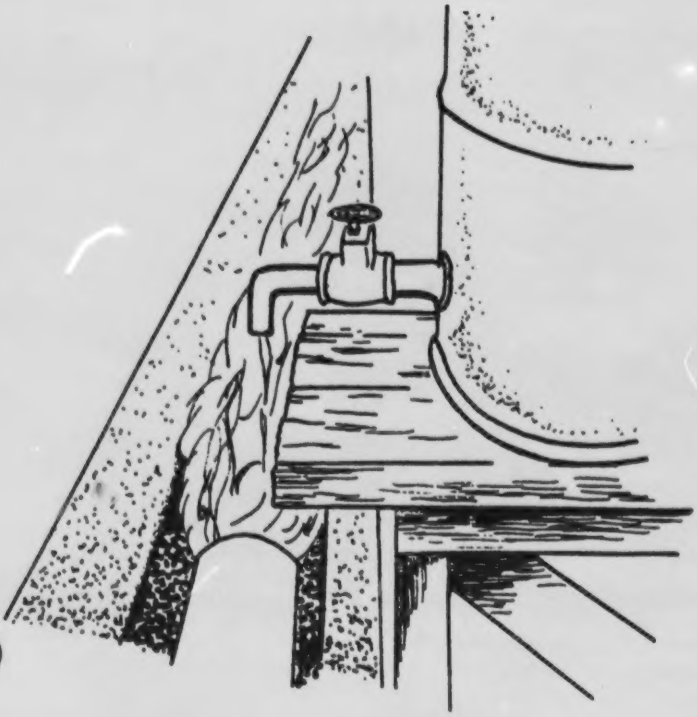


PHOSPHOROUS PLOWED
INTO TOPSOIL

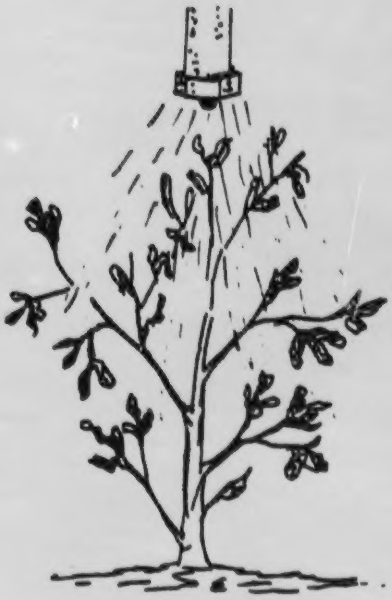


PHOSPHOROUS
AVAILABLE TO
ROOT SYSTEM

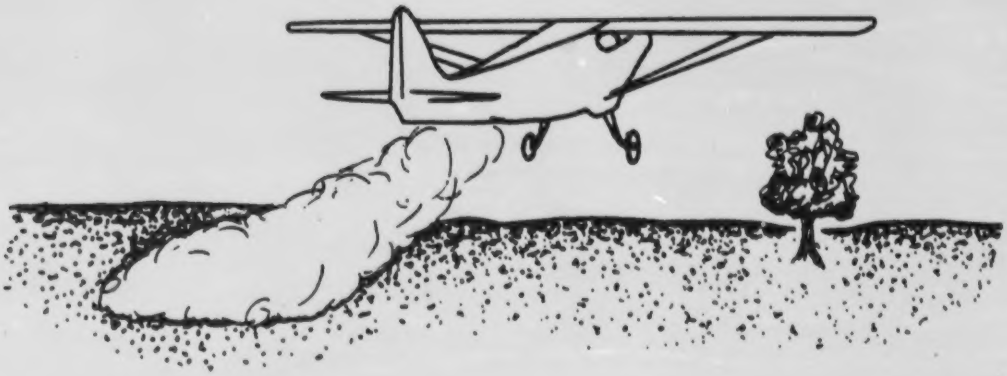
APPLICATION OF FERTILIZER



APPLYING FERTILIZER TO IRRIGATION WATER



FOILAGE SPRAYING



APPLYING FERTILIZER BY AIRPLANE

FERTILIZERS
UNIT II

ASSIGNMENT SHEET #1 - Calculate Cost Per Pound of Nitrogen for Different Fertilizer Analyses

Compare the cost per pound of actual nitrogen for each fertilizer. When you have completed the problems, turn in to your instructor for evaluation. Ask instructor for the local price per ton of each analysis.

1. Ammonium nitrate 33.0% Local price per ton____________

2. Anhydrous ammonia 82.0% Local price per ton___________

3. Urea 45.0% Local price per ton____________

4. Ammonium sulfate 21.0% Local price per ton ______________

FERTILIZERS
UNIT II

ASSIGNMENT SHEET #2 - Calculate Application Rates of Fertilizers

Calculate the amount of nutrients needed using the different fertilizer analysis. When completed return to instructor for his evaluation.

1. A farmer desires to plant wheat with a 0-20-0 analysis at a rate of 100 lbs. per acre. How many pounds of fertilizer would be needed?

2. How many pounds of 0-0-60 would be needed to apply 40 lbs. of K_2O per acre?

3. How many pounds of 82-0-0 would be needed to apply 100 lbs. of N per acre?

ASSIGNMENT #3 - DETERMINE FERTILIZER RECOMMENDATIONS

Make fertilizer recommendations using the soil test information given and the Fertilizer Recommendation Guides. Recommend the amount of fertilizer needed for each sample. Also make recommendations concerning the amount of lime to use to the pH of the soil.

Compute the following tests for the Central Region, maximum yield, dryland, and continuous cropping.

REPORT OF SOIL FERTILITY TESTS

SOIL TESTING LABORATORY
Agronomy Department
KANSAS STATE UNIVERSITY
Manhattan, Kansas 66506
Phone 913 532-6186

Name: ______________________

Address: ______________________ (Street or Route)

______________________ (City and State) ______ Zip Code

County: ______________________

Sample Submitted by: (If different than name at left)

Name: ______________________

Address: ______________________ (Street or Route)

______________________ (City and State) ______ Zip Code

Date Rec'd. ______________________

Date Reported: ______________________

Legal Description: ______ ¼; ______ ¼; ______ ¼; Sec. ______; T. ______; R. ______

Analyst: ______________________

IDENTIFICATION		SOIL TEST RESULTS									
							DTPA				
Laboratory Number	Field and Sample No.	Soil pH	Effective Calcium Carbonate (E.C.C.) lbs E.C.C./Acre	Available Phosphorus lbs P/Acre	Exchangeable Potassium lbs K/Acre	Organic Matter %	Available Zinc ppm Zn	Available Iron ppm Fe	Sample Depth In. 0-6" 6-24"	Available Nitrogen p.p.m. N	Available Profile Nitrogen p.p.m. N

Note: For interpretation of report and recommendations, see enclosed bulletin or contact your County Agent.

IDENTIFICATION			FERTILIZER AND LIME RECOMMENDATIONS						COMMENTS
			Lime*	POUNDS NUTRIENTS RECOMMENDED				Other	
Field and Sample No.	Year	Intended Crop	lbs E.C.C./A.	Nitrogen lbs./A.	Phosphate lbs./A	Potash lbs./A.	Zinc lbs./A		Time and Method of Application

* Lime recommendation made in terms of effective calcium carbonate (E.C.C.) and Ag lime rate based on vendor guarantee and soil test recommendation.

Recommendations made by: ______________________
Name

____
Title

FERTILIZERS
UNIT II

ASSIGNMENT SHEET #4 - Calculate Rate of Agriculture Lime

Calculate the amount of lime needed using the different lime requirements and liming materials when completed return to instructor for his evaluation.

1. A farmer desires to increase his soil pH for maximum plant growth. His soil test result shows that 4000 lbs. of ECC/A will be needed to raise the soil pH to the desired level. The local dealer will guarantee Ag lime with 50 percent ECC. How much Ag lime will be the farmer have to apply per acre to meet the recommended application.

FERTILIZERS
UNIT II

ANSWERS TO ASSIGNMENT SHEETS

A. Assignment Sheet #1 - To the satisfaction of the instructor

B. Assignment Sheet #2
   1. 500 lbs. of 0-20-0
   2. 66.6 lbs. of 0-0-60
   3. 125 lbs. of 82-0-0

C. Assignment Sheet #3
   1. Wheat Crop
      A. Lime-none
      B. Nitrogen-none
      C. Phosphorus-none
      D. Potassium-none
   2. Wheat Crop
      A. Lime-none
      B. Nitrogen-none
      C. Phosphorus 20 lbs.
      D. Potassium-none
   3. Wheat Crop
      A. Lime-none
      B. Nitrogen-28 lbs.
      C. Phosphorus-40 lbs.
      D. Potassium-40 lbs.

D. Assignment Sheet #4 - To the satisfaction of the instructor

FERTILIZERS
UNIT II

JOB SHEET #1 - Interpreting Soils Test Recommendations for Nitrogen

Transfer parts per million (PPM) report to pounds nitrogen available per acre.

A. Multiply available profile nitrogen PPM N. X 8 million lbs. of soil at a depth of 24" per acre.

Example: Soil test reads 25.0 PPM profile nitrogen.

25.0	PPM Nitrogen
x8	Million lbs. in acre to depth of 24 inches
200.0	pounds of available nitrogen per acre

FERTILIZERS
UNIT II

TEST

1. Match the terms on the left to the correct definition.

_____a. A term used to indicate the degree of acidity or alkalinity of the soil

_____b. A mixture of two carriers

_____c. The quantity and grade of materials used in making a fertilizer mixture

_____d. A term used to refer to soils containing 20% or more organic matter

_____e. The material added for weight to the fertilizer which does not contain N, P_2O_5, or K

_____f. Any natural manufactured or processed material or mixture of materials that contains one or more of the recognized plant food elements, either liquid or dry

_____g. The soil having a basic reaction; the pH is above 7.0

_____h. The ratio of nitrogen, phosphate, and potash in a fertilizer

_____i. The soil that contains enough exchangeable sodium to adversely affect the growth of most crops

_____j. The total of the fertilizer analysis

_____k. The soil having an acid reaction; the pH is below 7.0

1. Acid soil
2. Alkali soil
3. Conditioner
4. Formula
5. pH
6. Fertilizer
7. Alkaline soil
8. Ratio
9. Organic soil
10. Grade
11. Yield possibility
12. Analysis
13. Complete fertilizer
14. Mixed fertilizer
15. Percent sufficiency
16. Filler
17. Brand
18. Carrier

_____l. The percent of content of total (N) nitrogen available (P) phosphorus expressed as P_2O_5 and the amount of water soluble (K) potassium expressed as K_2O

_____m. The material added to the fertilizer in order to improve its physical condition

_____n. The trademark of the company which produced the fertilizer

_____o. The material added to the fertilizer which does not contain N, P_2O_5, or K

_____p. The yield obtained for a given cropping situation when all nutrients are adequate

_____q. A fertilizer containing only one nutrient

_____r. The percent of the yield possibility obtained because of the deficiency of a plant nutrient

_____s. One which supplies all three of the major nutrients

2. Name five factors that influence the use of fertilizers.

a.

b.

c.

d.

e.

3. Name the sixteen elements known to be essential for plant growth and name the correct chemical symbol for each.

a.__________ Symbol__________

b.__________ Symbol__________

c.__________ Symbol__________

d.__________ Symbol__________

e.__________ Symbol__________

f.______________ Symbol__________

g.______________ Symbol__________

h.______________ Symbol__________

i.______________ Symbol__________

j.______________ Symbol__________

k.______________ Symbol__________

l.______________ Symbol__________

m.______________ Symbol__________

n.______________ Symbol__________

o.______________ Symbol__________

p.______________ Symbol__________

4. Name the three major (primary) plant nutrients and name three characteristics of each.

a.______________________ Characteristics:____________________

____

____

b.______________________ Characteristics:____________________

____

____

c.______________________ Characteristics:____________________

____

____

5. Name three minor (secondary) plant nutrients and name three characteristics of each.

a.____________________ Characteristics:____________________

____

____

b.____________________ Characteristics:____________________

____

____

c.____________________ Characteristics:____________________

____

____

6. Name three micro-elements necessary for plant growth which are usually found in sufficient quantity in most soils.

a.

b.

c.

7. Name the four requirements that must be stamped on fertilizer bags according to state law.

a.

b.

c.

d.

8. Classify the following fertilizers accoridng to ordinary, high analysis, or concentrated.

a. 10-20-10 ________________

b. 5-10-0 ________________

c. 82-0-0 ________________

d. 16-20-0 ________________

9. Define the following.

a. Dry mixed fertilizer -

b. Liquid fertilizer -

c. Gas fertilizer -

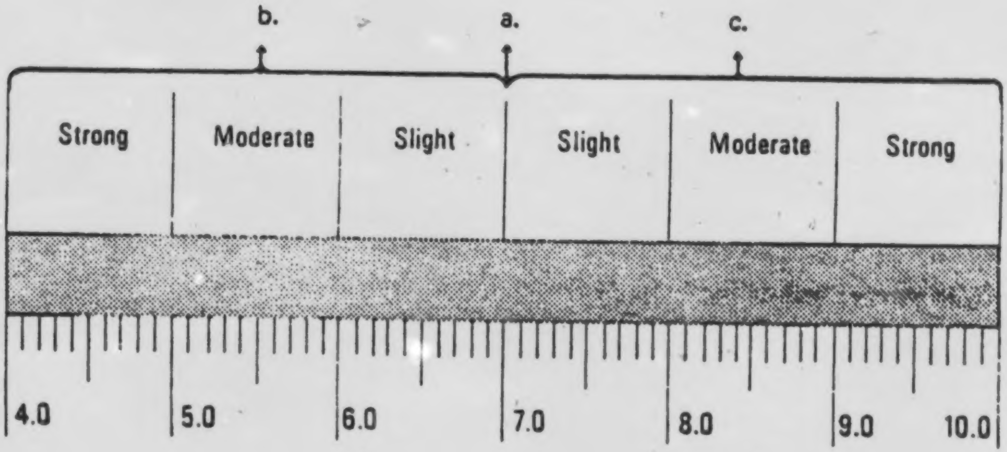
10. Discuss in a short paragraph what 20-10-10 means according to fertilizer analysis.

11. Match the hunger signs of plants on the right to examples of their plant food.

_____a. Phosphorus
_____b. Nitrogen
_____c. Magnesium
_____d. Potassium

1. Plants stunted and spindly, yellowish-green foliage, older leaves affected first, and leaf margins remain green
2. Stunted growth, abnormally green appearance, leaves become purple in advanced stages, and older leaves are affected first
3. Plants show general yellowing, older leaves affected first, leaves become reddish-purple in advanced stages, veins remain green, and leaves may curl downward
4. Short plants, general loss of green color, and leaf margins affected first

12. Identify the following parts of the pH scale. Use the information given below and the scale and determine if the soil is acid or alkaline.


b.
a.
c.
Strong
Moderate
Slight
Slight
Moderate
Strong
4.0
5.0
6.0
7.0
8.0
9.0
10.0

a.____

b.____

c.____

Suppose you were growing the following crops and soil test information was available on each field. Using the pH scale given, determine if the soil is acid, neutral, or alkaline.

d. Alfalfa soil test 5.5 __________________________

e. Corn soil test 7.2 __________________________

f. Wheat soil test 7.0 __________________________

g. Sorghum soil test 8.2 __________________________

13. Name three ways liming benefits plant growth.

a.

b.

c.

14. Name three factors that determine the amount of lime needed.

    a.

    b.

    c.

15. Match the plants on the right to the most desirable pH scale range.

_____a. Oats	1. Strong acidity 5.0 to 5.5
_____b. Corn	2. Medium to moderate acid 5.5 - 6.5
_____c. Alfalfa	3. Slightly acid to slightly alkaline 6.5 to 7.5
_____d. Watermelons	
_____e. Sundangrass	
_____f. Cotton	
_____g. Sorghum	

16. Classify the following fertilizers according to their percent nutrient value from the highest percent to the lowest. Place the percent in the blank provided.

    a. Nitrogen

    _____Ammonia sulfate

    _____Anhydrous ammonia

    _____Urea

    _____Ammonia nitrate

    b. Phosphate

    _____Phosphoric acid

    _____Rock phosphate

    _____Nitric phosphate

    _____Cons. superphosphate

    _____Ammonium phosphate

    c. Potash

    _____Potassium sulfate

    _____Potassium nitrate

    _____Muriate of potash

17. Name four factors to consider in caring for fertilizer equipment.

    a.

    b.

    c.

    d.

18. Name three factors to consider in storing fertilizers.

    a.

    b.

    c.

19. Match the description to the right with the method of fertilizer application.

_____A. Top dressing
_____B. Aerial Application
_____C. Band
_____D. Foliage Spray
_____E. Side dressing
_____F. Broadcasting

1. Placed in a strip 3 to 6 inches below seed
2. Drilled into the soil
3. Applied between rows at cultivation
4. Fertilizer is spread evenly over the soil and usually disced.
5. Applied in irrigation water.
6. Applied directly to the plant leaves.
7. Applied by airplane.

20. Work the following nitrogen problems.

    a. Suppose you were using ammonium nitrate which is 33.0 percent nitrogen and cost $68.00 per ton. What would it cost you per pound?

    b. Suppose you were using anhydrous ammonia which is 82.0 percent nitrogen and cost $85.00 per ton. What would it cost you per pount?

21. Work the following lime problem.

    A. Suppose your soil test recommended 8,000 lbs. of ECC per acre lime and Ag lime available tested 8%. What would be the application rate per acre of the Ag lime?

FERTILIZERS
UNIT II

ANSWERS TO TEST

1. 5 a.
14 b.
4 c.
9 d.
16 e.
6 f.
7 g.
8 h.
2 i.
10 j.
1 k.
12 l.
3 m.
17 n.
16 o.
11 p.
18 q.
15 r.
13 s.

2. a. Crops
b. Chemical condition of soil
c. Physical condition of soil
d. Insects and diseases
e. Climatic conditions

3. a. Hydrogen Symbol H
b. Oxygen Symbol O
c. Carbon Symbol C
d. Nitrogen Symbol N
e. Phosphorus Symbol P

f.	Potassium	Symbol K
g.	Calcium	Symbol Ca
h.	Magnesium	Symbol Mg
i.	Sulfur	Symbol S
j.	Iron	Symbol Fe
k.	Zinc	Symbol Zn
l.	Manganese	Symbol Mn
m.	Copper	Symbol Cu
n.	Boron	Symbol B
o.	Molybdenum	Symbol Mo
p.	Chloride	Symbol Cl

4.	a.	Nitrogen	Any three of the following characteristics: Part of every living cell Part of the chlorphyl molecule Gives dark green color Aids and promotes seed development Easily translocated
	b.	Phosphorus	Any three of the following characteristics: Part of every living cell Contributes to early maturing of crops Necessary for seed formation Stimulates root growth Easily translocated
	c.	Potassium	Any three of the following characteristics: Necessary for production and translocation of carbohydrates Aids in respiration Controls water intake and respiration Easily translocated Promotes health and vigor of plants Stiffens straw and stalks
5.	a.	Calcium	Any three of the following characteristics: Speeds decay of organic matter Stimulates formation of nitrates Promotes root and leaf growth Necessary for nodulation of legumes
	b.	Magnesium	Any three of the following characteristics: Necessary for chlorophyl or green coloring Increases absorption of phosphorus Aids in formation of fats and oils Important in plant enzyme system

c. Sulfur — The following characteristics:

Necessary for nodule formation on legumes
Associated with plant enzymes systems
Easily translocated

6. Any three of the following:
   a. Manganese
   b. Boron
   c. Copper
   d. Zinc
   e. Iron

7. a. Name, brand, or trademark
   b. Analysis
   c. Net weight
   d. Name and address of manufacturer

8. a. Concentrated
   b. High
   c. Concentrated
   d. Concentrated

9. a. A granulated fertilizer made by combining selected plant food materials to obtain certain ratios and quantities of plant nutrients.
   b. A liquid fertilizer made by dissolving the correct proportion of the solid plant food carriers into water or by the neutralization process of neutralizing phosphoric acid with ammonia.
   c. A liquid fertilizer containing solid fertilizer materials which are dispersed under pressure and usually contains a higher analysis than clear liquid mixes

10. Discussion should include the following statements:
    a. Consists of three figures
    b. First figure represents pounds of total nitrogen available in 100 pounds of fertilizer
    c. Second figure represents pounds of total phosphorus available expressed as P_2O_5
    d. Third figure represents pounds of water soluble potash expressed as K_2O

11. 2 a.
    1 b.
    4 c.
    3 d.

12. a. Neutral
    b. Acid
    c. Alkaline
    d. Acid
    e. Alkaline
    f. Neutral
    g. Alkaline

13. Any three of the following:
    a. Corrects soil acidity
    b. Reduces solubility of toxic elements
    c. Supplies calcium and magnesium
    d. Improves biological activity
    e. Improves physical condition of soil
    f. Makes fertilizers more effective and efficient
    g. Improves yields

14. a. Amount of clay (texture)
    b. Type of clay (structure)
    c. Organic matter

15. 2 a.
    2 b.
    3 c.
    1 d.
    2 e.
    2 f.
    2 g.

16. a. Nitrogen

21%	Ammonia sulfate
82%	Anhydrous ammonia
45%	Urea
33%	Ammonia nitrate

b. Phosphate

50-54%	Phosphoric acid
30-34%	Rock phosphate
10-20%	Nitric phosphate
44-48%	Conc. superphosphate
35-50%	Ammonium phosphate

c. Potash

50-53%	Potassium sulfate
44-46%	Potassium nitrate
60-63%	Muriate of potash

17. a. Remove all fertilizer from hopper after use
    b. Clean hopper thoroughly with water
    c. Allow hopper to dry
    d. Apply a mixture of 50% kerosene to hopper

18. a. Store in dry location
    b. Do not stack in direct contact with walls
    c. Do not stack directly on concrete floor

19. 2 a.
    7 b.
    1 c.
    6 d.
    3 e.
    4 f.

20. a. 10.3 cents per pound
    b. 5.1 cents per pound

21. $\frac{8000}{.80}$ = 10,000 lbs. or 5 tons

MARKETING CROPS
UNIT I

TERMINAL OBJECTIVE

After completion of Unit I, the student should be able to discuss supply and demand as related to the crop marketing industry and draw graphs indicating each. He should be able to compare advantages and disadvantages of home storage versus commercial storage. He should be able to recognize the advantages of hedging and work hedging problems as they are associated with the marketing industry. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the post test.

SPECIFIC OBJECTIVES

After completion of instruction, the student should be able to:

1. Match terms associated with marketing crops to the correct definition.
2. Name four factors that add dollars to the marketing costs of products.
3. Discuss in a short paragraph how supply and demand affects the marketing price of crops.
4. Distinguish between supply and demand by observing each on a bar graph.
5. Name four factors that affect the share farmers receive on commodities.
6. Name five factors causing shifts in demand of a commodity.
7. Match the acts that established standards and grades for most commodities to the correct definition.
8. Name three factors influencing time to market.
9. Name four market outlets crops.
10. Name five advantages of home storage versus commercial storage.
11. Name four disadvantages of home storage of crops.
12. Match the classes of elevators to the correct definition.
13. Select a job from a list of job opportunities that are available in the field of marketing and do further research in this area.
14. Name three main functions of product standards.
15. Select three factors affecting the grades of the following crops: grains, fiber, hay, fruits, and vegetables.

16. Name the six factors that determine the federal grades of grains.
17. Discuss what is meant by nonrecourse loans under the Commodity Credit Corporation.
18. Arrange the channeling of crops from producer to consumer.
19. Name the seven steps of the marketing channel and discuss each step.
20. Discuss in a short paragraph hedging as it relates to crop marketing.
21. Name three ways in which a farmer might use grain futures.
22. Name three sources of crop market information.
23. Select the leading grain futures markets from a list.
24. Demonstrate the ability to calculate problems of marketing crops by hedging.
25. Demonstrate the ability to collect and interpret market information and determine when to sell the product you have produced for the highest net return.

MARKETING CROPS
UNIT I

SUGGESTED ACTIVITIES

I. Instructor:
   - A. Provide students with objective sheet.
   - B. Provide students with information and assignment sheets.
   - C. Make transparency.
   - D. Discuss terminal and specific objectives.
   - E. Discuss information and assignment sheets.
   - F. Arrange field trip to allow students an opportunity to see the different processes involved in marketing crops.
   - G. Give test.

II. Students:
   - A. Read objectives.
   - B. Study information sheets.
   - C. Work assignment sheets and turn in to instructor for grading.
   - D. Participate in field trip.
   - E. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:
   - A. Objectives
   - B. Information Sheets
   - C. Assignment Sheets
     1. Assignment Sheet #1 - Calculate Problems of Marketing Crops by Hedging
     2. Assignment Sheet #2 - Collect and Interpret Market Information
     3. Assignment Sheet #3 - Record the Cash Market Price of Wheat for a Thirty-Day Period
   - E. Answers to assignment sheets

F. Test

G. Answers to test

II. References:

A. Walton, E.V.O. and O.M. Holt, Profitable Southern Crops. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.

B. Hughes, Harold D. and Darrel S. Metcalf. Crop Production. New York: The Macmillan Company.

C. Hamilton, James E. and W.R. Bryant. Profitable Farm Management. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.

D. Doane's Farm Management Guide. St. Louis, Missouri: Doane Agricultural Service, Inc.

E. Kohls, Richard L. Marketing of Agricultural Products. New York: The Macmillan Company.

F. Myths of Marketing, Cooperative Extension Service, KSU, Manhattan, Kansas 66506.

G. Futures Markets Livestock, MF-346, Cooperative Extension Service, KSU, Manhattan, Kansas 66506.

H. Futures Markets - Grain, MF-347, Cooperative Extension Service, KSU, Manhattan, Kansas 66506.

I. Futures Markets - Fact or Fiction, MF-308, Cooperative Extension Service, KSU, Manhattan, Kansas 66506.

MARKETING CROPS
UNIT I

INFORMATION SHEET

I. Terms and definitions

   A. Marketing - The activity involved in buying or selling a product

   B. Cooperative marketing - A process whereby farmers pool their crops for shipment to market to increase bargaining power

   C. Commodity Credit Corporation - An independent agency of the USDA responsible for making loans to farmers

   D. Parity price - That price a farmer must receive for his crop to enable him to buy the same amount of goods and services now as he did from the same quantity for a previous year based on the period between August, 1909 - July, 1914

   E. Basis - The difference between the cash and futures market

   F. Re-seal - A term referring to the extension of storage of grain for recourse of an extended commodity credit loan

   G. Marketing margin - The difference between the amount consumers pay for the final product and the amount producers receive

   H. Law of demand - Merely formalizes the logical relationship between quantities taken and price

   I. Effective demand - The desire of the consumer for the commodity backed up by purchasing powers

   J. Equilibrium price - That price toward which actual prices will tend to move

   K. Market - That area of space wherein the supply and demand forces can work

   L. Contract - A promise to deliver or accept delivery of a specific grade of commodity at a specified time, place, and price

   M. Speculators - Those individuals who make their living buying and selling on the futures market

   N. Market information - A process of collecting, interpreting, and disseminating large varieties of data which are necessary to the smooth operation of the marketing process

   O. Middlemen of marketing - Those individuals who specialize in various marketing functions

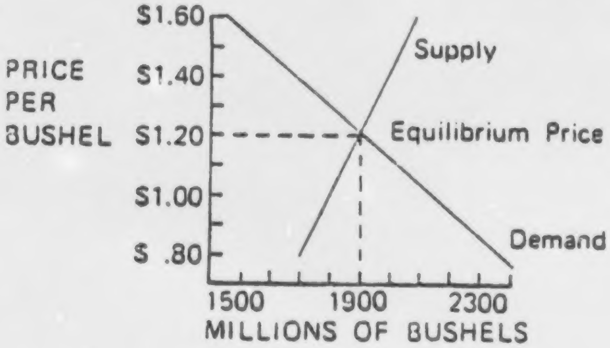
   P. Marketing channel - The movement of a commodity from producer to final consumer

II. Factors contributing to marketing costs
  A. General rise in price levels
  B. Quantity of food moving through market channels
  C. Increased demand by consumers for service and quality
  D. Transportation costs

III. Supply and demand effects
  A. Demand - a schedule of different quantities of a commodity that buyers will purchase at different prices at a given time and place
    1. Quantity of product available
    2. Export
  B. Supply - a schedule of differing quantities which will be offered for sale at different prices at a given time and place
    1. Availability of product
    2. Import

IV. Supply and demand graph
  A. Demand curve always sloped downward
  B. Supply curve always sloped upward

(NOTE: Point of intersection where supply and demand cross is known as the equilibrium price.)



V. Factors affecting farmer's share on commodities
  A. Processing - cost of changing product form to satisfy the consumer
  B. Perishability - spoilage is great; expensive refrigeration
  C. Bulkiness - some products require large quantities of space
  D. Extreme seasonality of production - quick market products

VI. Factors causing shifts in demand

- A. Population increase or decrease
- B. Difference in income and purchasing powers
- C. Changes in tastes and preferences of consumers
- D. Cost of product
- E. Expectation of buyers

VII. Standard and grade acts

- A. Agricultural Marketing Act - established in 1946 giving the secretary of agriculture power to develop and establish grades and standards for most farm commodities
- B. Grain Standards Act - established in 1916 setting federal standards requiring all grain to be graded if sold through interstate commerce
- C. Standard Containers Act - established in 1916 setting standards on the 2-quart, 4-quart, and 12-quart baskets
- D. Agricultural Adjustment Act - established in 1933 for the purpose of organizing criterion for a fair price for agricultural products
- E. Pure Food and Drug Act - established in 1906, expanded in 1938; designed to prevent shipment of adulterated or misbranded food and drugs

VIII. Factors influencing time to market

- A. Price at harvest time
- B. Futures
- C. Carry-over
- D. Projected national yield
- E. Potential export
- F. Cost of storage
- G. Financial status of producer
- H. Storage facilities

IX. Markets Outlets

- A. Home farm use
    - 1. Animal consumption
    - 2. Commercial feedlots
    - 3. Feed manufacturing plants
- B. Local and/or terminal elevators
- C. Direct to export

D. Grain pooling

(NOTE: A grain pool takes the production of many farmers, groups it together, and sells the pooled grain as if it were owned by one farmer. As sales are made from the pool, each producer shares in the proceeds according to his contribution to the pool. Since sales from the pool are normally made throughout the year, the average price is neither the low nor high for the year.)

X. Advantages of home storage vs. commercial storage

A. Cheaper than commercial storage

B. Receive full value of government loan

C. Receive storage payment on re-seal program

D. Producer retains control of crop

E. Provides an opportunity for direct sale to export

XI. Disadvantages of home storage

A. Shrinkage loss

B. Increased handling cost

C. Cost of facilities

D. Risk

1. Heat damage

2. Insect damage

3. Insurance

XII. Classes of elevators

A. Country

1. Independent - an elevator operated and controlled by individuals within the community

2. Cooperative - an elevator operated cooperatively by farmers of the area

3. Line - an elevator operated and owned from a central headquarters or chain

B. Terminal - an elevator operated by grain dealers or merchants who buy grain for storage and later sell to millers and processors or export

(NOTE: Becuase of the large storage capacity and investment powers, the terminal operator owners are able to utilize the futures market for hedging. The practice of buying and selling in futures is used by all elevators as they purchase grain.)

XIII. Job opportunities
  A. Elevator manager or operator
  B. Seed grader or tester
  C. Elevator employee
  D. Broker
  E. Insurance representative
  F. Custom cutter
  G. Processing foreman or manager

XIV. Functions of product standards
  A. Eliminate abuse in the market
  B. Foundation for market system
  C. Protect farmer, buyer, and consumer

XV. Factors affecting grades
  A. Grains
    1. Size of kernels
    2. Color of kernels
    3. Shape of kernels
    4. Free of decay
    5. Free of foreign material
    6. Free of insect damage
    7. Free of disease damage
    8. Maturity
    9. Moisture content
    10. Mechanical damage
    11. Free from heat damage

  B. Hay
    1. Protein content
    2. Color
    3. Maturity
    4. Leafiness
    5. Texture

  C. Fiber
    1. Proper size

   2. Good, natural coloring
   3. Proper shape
   4. Free of decay
   5. Free of foreign material
   6. Free of insect damage
   7. Free of disease damage
   8. Properly matured
   9. Moisture content
   10. Length and strength of fiber

D. Fruits and vegetables
   1. Proper size
   2. Uniform, natural color
   3. Uniform shape
   4. Appearance (looks fresh and firm)
   5. Free of decay
   6. Free of sunscald
   7. Free of insect damage
   8. Free of disease damage
   9. Free of bruises
   10. Properly matured

XVI. Factors determining federal grades of grains
   A. Test weight (pounds)
   B. Moisture content (percent)
   C. Damaged kernels
      1. Heat damaged kernels (percent)
      2. Total damaged kernels (percent)
   D. Broken kernels, foreign matierals, and other grains (percent)
   (NOTE: Above factors presently used for grain sorghum.)

XVII. Nonrecourse loan - A program sponsored by the Commodity Credit Corporation whereby a farmer "seals" his commodity in acceptable storage.

(NOTE: A farmer may obtain a loan on the crop he has produced based on the amount of the support price. If the market rises above the loan, he sells and repays the loan. If the market price never reaches the loan rate, the farmer delivers the commodity to the government and thereby fulfills his obligation.)

XVIII. Channel of marketing

A. Hay
   1. Baler
   2. Storage
   3. Feeder

   (NOTE: This marketing channel does not always follow one certain pattern. In several areas of the state, hay is cut and placed in silos or converted directly into pellets for feeding purposes.)

B. Grains
   1. Combine
   2. Dryer
   3. Elevator
   4. Broker
   5. Processor
   6. Wholesaler
   7. Consumer

C. Fruits and vegetables
   1. Picker
   2. Grader
   3. Cleaner
   4. Packager
   5. Broker
   6. Wholesaler
   7. Retailer
   8. Consumer

XIX. Steps of marketing channel

A. Assembling - the bringing together of crops for shipment

B. Grading - sorting the crop group for uniform quality and size

C. Processing - putting crop into usable form for the consumer

D. Transporting - the movement of the crop to market

E. Storage - the storing of crop for future use or until a higher price can be obtained

F. Financing - the loan is a form of credit to a farmer until the crop can be sold or processed

G. Risk-taking - a process of assuming risk until the crop has been sold or processed

XX. Hedging - the process of shifting the risk from prices which change in either direction

(NOTE: The futures market is appraising the situation as it might develop, where the cash market as it is developing.)

Example of hedging using the cash and futures market

	Cash market	Futures market
On day of purchase	Purchase 50,000 bushels of wheat at 2.00 per bushel	Sold 50,000 bushels of wheat at 2.10 per bushel
	Sold 50,000 bushels of wheat at 1.95 per bushel	Purchased 50,000 bushels of wheat at 2.05 per bushel
On day of cash sale	The farmer lost 5 cents per bushel on cash market	However he gained 5 cents on the futures market

(NOTE: When cash grain was purchased, futures were sold. When cash grain was sold, futures were purchased. The cash market declined, as he feared it might, and he lost five cents a bushel when he finally sold his grain. However, the futures market also fell, and there was a net gain of five cents a bushel on his futures transactions. This was a perfect hedge, since the loss on one market was exactly offset by the gain on the other.)

XXI. Ways of using futures market

A. Price crop any time prior to harvest

B. Set price of product without taking immediate delivery

C. Fix price of grain in storage for deferred delivery

D. Speculation purposes

XXII. Sources of crop market information
- A. Radio and television stations
- B. Newspapers
- C. Magazines
- D. Local elevators or markets
- E. Feed stores
- F. U.S. Department of Commerce
- G. U.S. Department of Agriculture
  - 1. Agricultural Marketing Service
  - 2. Federal Market News

XXIII. Leading grain futures market
- A. Grain
  - 1. Chicago - most important grain market
  - 2. Minneapolis
  - 3. Kansas City

MARKETING CROPS
UNIT I

ASSIGNMENT SHEET #1 - Calculate Problems of Marketing Crops By Hedging

Suppose you were a farmer and had 20,000 bushels of wheat to market. The price of wheat on the cash market today was 1.35 per bushel, and the futures market was 1.40 per bushel on a specified month. How would you be able to hedge to assure yourself of the 1.35 per bushel at a later date? Calculate the problem and show your work. When completed turn in to instructor for his evaluation.

MARKETING CROPS
UNIT I

ASSIGNMENT SHEET #2 - Collect and Interpret Market Information

By using the different sources of market information, collect the cash market price of the crops listed below. The market prices may be recorded periodically on the graph provided. Also, if possible, find out what the futures market will be on each crop and the month of the futures. Be sure to record your source of market information and identify the board which the market futures were based on. When completed return to instructor for his evaluation.

Source of market information____________________Date_________________

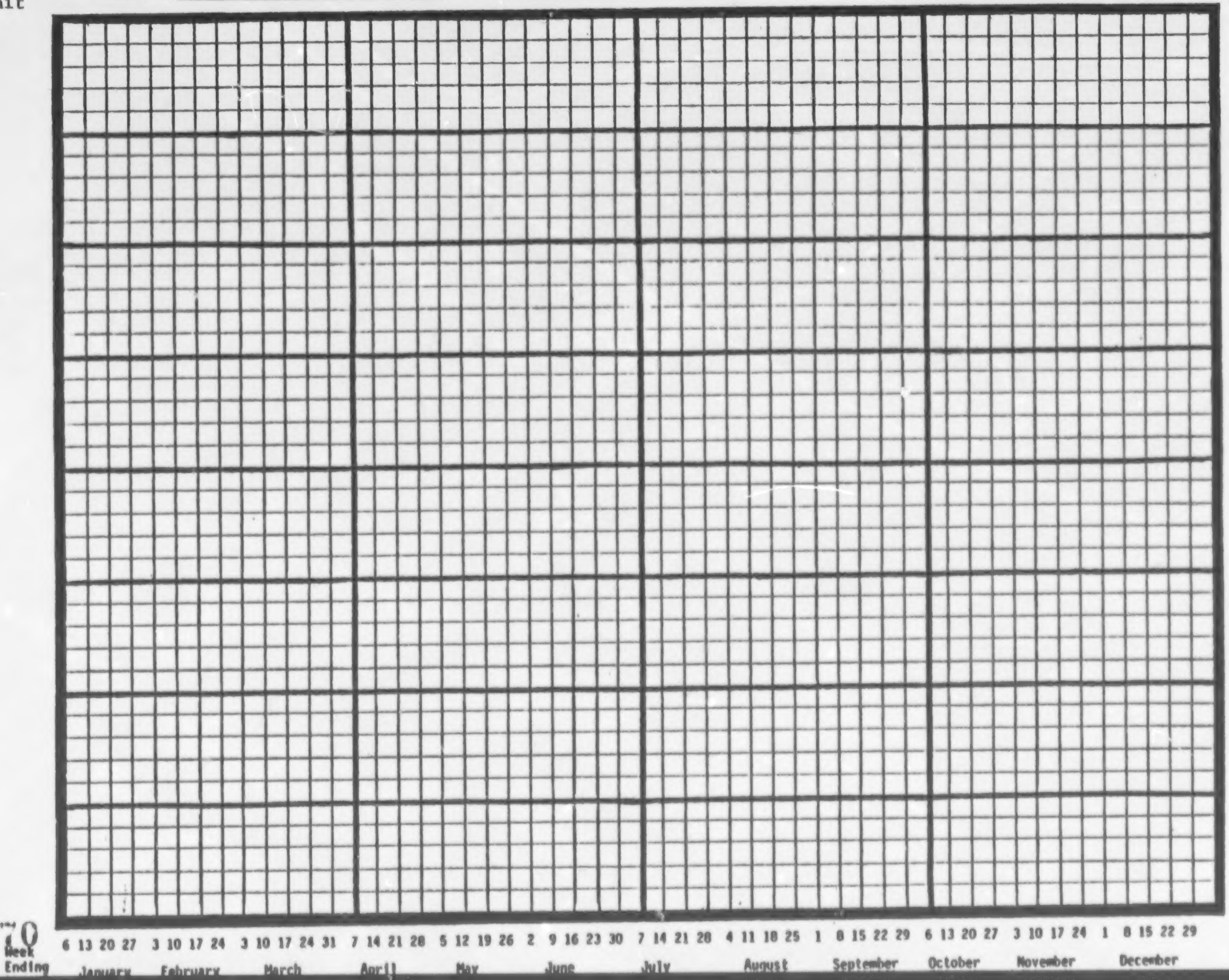
Cash Price	Futures Price	Board Location	Month of Futures
Wheat______________	Wheat__________________	________________	_________________
Corn_______________	Corn___________________	________________	_________________
Grain sorghums_____	Grain Sorghums_________	________________	_________________
Oats_______________	Oats___________________	________________	_________________

ASSIGNMENT SHEET #2 - Collect and Interpret Market Information

Price
Per
Unit

Commodity____________________ Market________________________ Year___________________

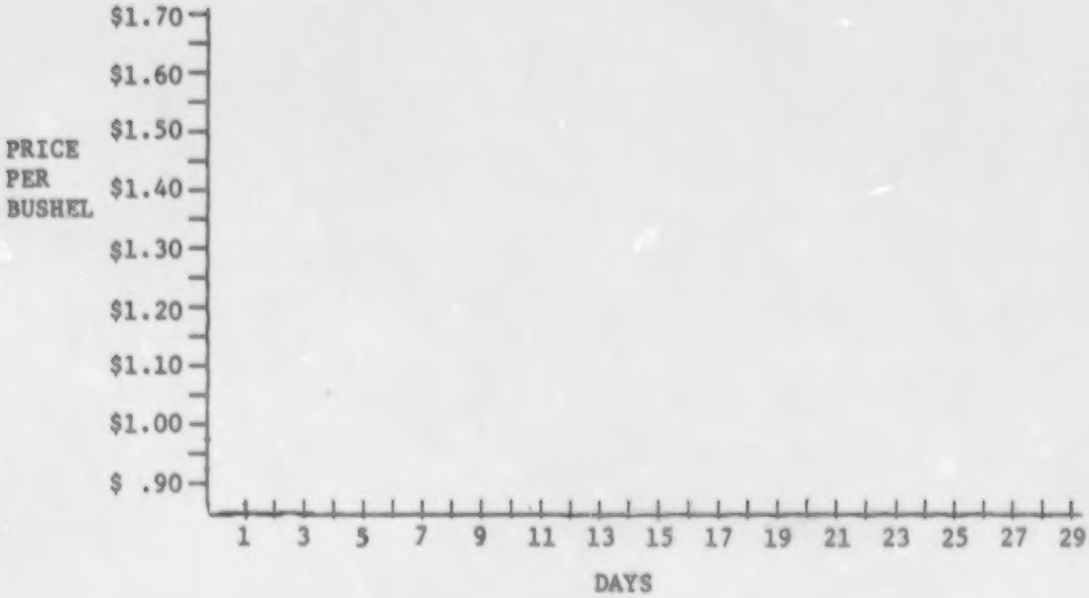
Price
Per
Unit



MARKETING CROPS
UNIT I

ASSIGNMENT SHEET #3 - Record the Cash Market Price of Wheat for a Thirty-Day Period

Using the daily or weekly market information, record the cash market price of wheat on the graph below. Suppose you have 10,000 bushels of wheat in home storage with a government loan of 1.28 per bushel. At what point along the cash market price do you want to sell your crop?



Month______________________________

What day will you sell your wheat?____________________

What was the price received per bushel?____________________

MARKETING CROPS
UNIT I

ANSWERS TO ASSIGNMENT SHEET

Assignment Sheet #1

	Cash Market	Futures Market
On day of cash purchase	Purchase 20,000 bushels wheat @ 1.35	Sold 20,000 bushels wheat @ 1.45
On day of cash sale	Sold 20,000 bushels wheat @ 1.30	Purchase 20,000 bushels wheat @ 1.40
	A loss of 5 cents a bushel on cash transactions	A gain of five cents a bushel on the futures transactions

Assignment Sheet #2 and #3 - To the satisfaction of the instructor.

MARKETING CROPS
UNIT I

TEST

1. Match the terms on the right to the correct definition.

_____a. The movement of a commodity from producer to final consumer

_____b. The activity involved in buying or selling a product

_____c. Those individuals that specialize in various marketing functions

_____d. A process whereby farmers pool their crops for shipment to market to increase bargaining power

_____e. A process of collecting, interpreting, and disseminating large varieties of data which are necessary to the smooth operation of the marketing process

_____f. An independent agency of the USDA responsible for making loans to farmers

_____g. Those individuals who make their living buying and selling on the futures market

_____h. That price a farmer must receive for his crop to enable him to buy the same amount of goods and services now as he did from the same quantity for a previous year based on the period between August, 1909 and July, 1914

_____i. A promise to deliver or accept delivery of a specific grade of commodity at a specified time, place, and price

1. Law of demand
2. Effective demand
3. Equilibrium price
4. Market
5. Contract
6. Speculators
7. Market Information
8. Middlemen of marketing
9. Marketing channel
10. Marketing
11. Cooperative marketing
12. Commodity Credit Corporation
13. Parity price
14. Basis
15. Re-seal
16. Marketing margin

______j. The difference between the cash and futures market

______k. That area of space wherein the supply and demand forces can work

______l. A term referring to the extension of storage of grain for recourse of an extended commodity credit loan

______m. That price toward which actual prices will tend to move

______n. The difference between the amount consumers pay for the final product and the amount producers receive

______o. The desire of the consumer for the commodity backed up by purchasing powers

______p. Merely formalizes the logical relationship between quantities taken and price

2. Name four factors that add dollars to the marketing costs of products.

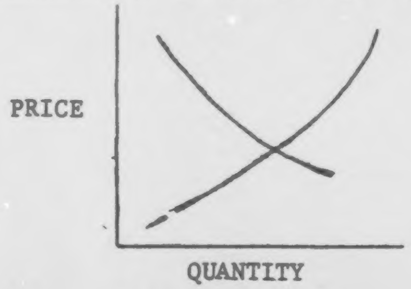
   a.

   b.

   c.

3. Discuss in a short paragraph how supply and demand affects the marketing price of crops.

4. Using the following information, place an X on the graph curve to indicate the direction that supply travels.



5. Name four factors that affect the share farmers receive on commodities.
   a.
   b.
   c.
   d.

6. Name five factors causing shifts in demand of a commodity.
   a.
   b.
   c.
   d.
   e.

7. Match the acts on the right to the correct definition.

   ______a. Established in 1916 setting standards on the 2-quart, 4-quart, and 12-quart baskets

   ______b. Established in 1946 giving the secretary of agriculture power to develop and establish grades and standards for most farm commodities

   ______c. Established in 1933 for the purpose of organizing criterion for fair price of agricultural products

   ______d. Established in 1916 setting federal standards requiring all grain to be graded if sold through interstate commerce

   ______e. Established in 1906, expanded in 1938; designed to prevent shipment of adulterated or misbranded food and drugs

   1. Standard Containers Act
   2. Agricultural Marketing Act
   3. Grain Standards Act
   4. Agricultural Adjustment Act
   5. Pure Food and Drug Act

8. Name three factors influencing time to market.
   a.
   b.
   c.

9. Name three sources of marketing crops.
   a.
   b.
   c.

10. Name five advantages of home storage.
    a.
    b.
    c.
    d.
    e.

11. Name four disadvantages of home storage.
    a.
    b.
    c.
    d.

12. Match the elevators on the right to the correct definition.

______a. An elevator operated by grain dealers or merchants who buy grain for storage and later sell to millers and processors or export

______b. An elevator operated and owned from a central headquarters or chain

______c. An elevator operated and controlled by individuals within the community

______d. An elevator operated cooperatively by farmers of the area

1. Line
2. Cooperative
3. Terminal
4. Independent

13. Select a job from the list of job opportunities that are available within the marketing industries. These job opportunities are listed on the right. If you have an additional job in mind, list it and discuss why you chose this particular job.

Job______________

Why did you select this job?

1. Elevator manager or operator
2. Seed grader or tester
3. Elevator employee
4. Broker
5. Insurance representative
6. Custom cutter
7. Processing foreman or manager

14. Name three main functions of product standards.

a.

b.

c.

15. Select factors from the list on the right that affect grades of the following crops. If the factor affects the particular crop, record the number(s) in the blank provided.

___________a. Grain crops

___________b. Hay crops

___________c. Fiber crops

___________d. Fruit and vegetable crops

1. Proper size
2. Good, natural coloring
3. Proper shape
4. Free of decay
5. Free of foreign material
6. Free of insect damage
7. Free of disease damage
8. Free of bruises
9. Appearance (looks fresh and firm)
10. Protein content
11. Color of leaf

12. Moisture content
13. Mechanical damage
14. Maturity
15. Leafiness
16. Length of fiber
17. Sunscald

16. Name the six factors that determine the federal grades of grains.

    a.
    b.
    c.
    d.
    e.
    f.

17. Discuss what is meant by nonrecourse loans available under the Commodity Credit Corporation.

18. Arrange the channeling of the following crops listed below from the producer to the consumer. Each crop should be started from the field and list the other channeling steps in order.

    a. Grain crops

________	Elevator
________	Consumer
________	Combine
________	Dryer
________	Processor
________	Wholesaler
________	Retailer

b. Hay crops

__________ Storage

__________ Baler

__________ Feeder

c. Fruit and vegetable crops

__________ Grader

__________ Broker

__________ Cleaner

__________ Picker

__________ Wholesaler

__________ Consumer

__________ Retailer

__________ Packager

19. Name the seven steps of the marketing channel and discuss each step.

a.

b.

c.

d.

e.

f.

g.

20. Discuss, in a short paragraph, hedging as it relates to crop marketing.

21. Name three ways of using futures markets.
    a.
    b.
    c.

22. Name three sources of crop market information.
    a.
    b.
    c.

23. Select the leading grain and cotton futures markets from the list below. Record the number in the blank provided.

______a. Grain futures market

1. Chicago
2. Texas
3. Oklahoma

24. Demonstrate the ability to:
    a. Calculate problems of marketing crops by hedging.
    b. Buying and selling on the futures market.
    c. Collect and interpret market information.

MARKETING CROPS
UNIT I

ANSWERS TO TEST

1.
   - __9__ a.
   - __10__ b.
   - __8__ c.
   - __11__ d.
   - __7__ e.
   - __12__ f.
   - __6__ g.
   - __13__ h.
   - __5__ i.
   - __14__ j.
   - __4__ k.
   - __15__ l.
   - __3__ m.
   - __16__ n.
   - __2__ o.
   - __1__ p.

2. a. General rise in price levels
   b. Quantity of food moving through market channels
   c. Increased demand by consumers for service and quality
   d. Transportation costs

3. The discussion should mention that demand is a schedule of different quantities of a commodity that buyers will purchase at different prices at a given time and place, where supply is a schedule of differing quantities which will be offered for sale at different prices at a given time and place

4.

PRICE

QUANTITY

5. a. Processing
   b. Perishability
   c. Bulkiness
   d. Extreme seasonality of production

6. a. Population increase or decrease
   b. Difference in income and purchasing powers
   c. Changes in tastes and preferences of consumers
   d. Cost of product
   e. Expectations of buyers

7.

1 a.
2 b.
4 c.
3 d.
5 e.

8. Any three of the following:
    a. Price at harvest time
    b. Futures
    c. Carry-over
    d. Projected national yield
    e. Potential export
    f. Cost of storage
    g. Financial status of producer
    h. Storage facilities

9. a. Home farm use
    b. Local and/or terminal elevators
    c. Direct to export

10. a. Cheaper than commercial storage
    b. Receive full value of government loan
    c. Receive storage payment on re-seal program
    d. Producer retains control of crop
    e. Provides an opportunity for direct sale to export

11. a. Shrinkage loss
    b. Increased handling cost
    c. Cost of facilities
    d. Risk

12. __3__ a.
    __1__ b.
    __4__ c.
    __2__ d.

13. Answer will vary with different students; use teacher evaluation

14. a. Eliminate abuse in the market
    b. Foundation for market system
    c. Protect farmer, buyer, and consumer

15. a. 1, 2, 3, 4, 5, 6, 7, 12, 13
    b. 10, 11, 14, 15
    c. 1, 2, 3, 4, 5, 6, 7, 12, 14, 16
    d. 1, 2, 3, 4, 6, 7, 8, 9, 14, 17

16. a. Test weight
    b. Soundness of kernels
    c. Cleanliness
    d. Purity of type
    e. Moisture content
    f. Condition of grain

17. Nonrecourse loan is a program sponsored by the Commodity Credit Corporation whereby a farmer "seals" his commodity in acceptable storage.

18. a. Grain crops
    Combine
    Dryer
    Elevator
    Processor
    Wholesaler
    Retailer
    Consumer
    b. Hay crops
    Baler
    Storage
    Feeder
    c. Fruit and vegetable crops
    Picker
    Grader
    Cleaner
    Packager
    Broker
    Wholesaler
    Retailer
    Consumer

19. a. Assembling - The bringing together of crops for shipment
    b. Grading - Sorting the crop group for uniform quality and size
    c. Processing - Putting crop into usable form for the consumer
    d. Transporting - The movement of the crop to market
    e. Storage - Storing of crop for future use or until a higher price can be obtained
    f. Financing - The loan in form of credit to a farmer until the crop can be sold or processed
    g. Risk-taking - A process of assuming risk until the crop has been sold or processed

20. Hedging - The process of shifting the risk from prices which change in either direction by using the futures market.

21. Any three of the following:
    a. Price crop any time prior to harvest
    b. Set price of product without taking immediate delivery
    c. Fix price of grain in storage for deferred delivery
    d. Speculation purposes

22. Any three of the following:
    a. Newspapers
    b. Magazines
    c. Radio and television stations
    d. Local elevators or markets
    e. Feed stores
    f. Department of Commerce
    g. Department of Agriculture

23. __1__ a.

24. Performance skills will be evaluated by the instructor.

CROP PLANTING
UNIT V

TERMINAL OBJECTIVE

After completion of Unit V, the student should be able to list the recommended varieties, planting dates, planting rates, planting depths, seed spacings, and method of seeding for the crops common to the area. The student should also be able to list the recommended planting methods and implements for each of the crops common to the area.

SPECIFIC OBJECTIVES

After completion of instruction, the student should be able to:

1. Define four terms associated with crop planting.
2. List two of the recommended varieties for four of the local crops.
3. List the recommended planting dates for five of the common Kansas crops.
4. List the recommended planting rates for five crops in the local area.
5. Match five crops to their recommended planting depths in the local area.
6. List the recommended seed spacings for five crops in the local area.
7. List the recommended methods of planting for eight crops in the local area.

CROP PLANTING
UNIT V

SUGGESTED ACTIVITIES

I. Instructor:

  A. Provide student with objective sheet.

  B. Provide students with information and assignment sheets.

  C. Provide students with Kansas Corn Performance Tests, Kansas Agricultural Experiment Station.

  D. Make transparencies.

  E. Discuss terminal and specific objectives.

  F. Discuss information and assignment sheets.

  G. Give test.

II. Student:

  A. Read objectives.

  B. Studey information sheets and complete each assignment sheet.

  C. Make sure you are able to perform according to the type of performance called by each specific objective.

  D. Take test.

INSTRUCTIONAL MATERIALS

I. Provided in this unit:

  A. Objectives

  B. Information sheets

  C. Transparency masters

    1. TM 1 - Power-drive, broadcast

    2. TM 2 - Corn seed plates

  D. Assignment Sheets

    1. Assignment Sheet #1 - Collect ten pictures of various kinds of planting equipment typical in your local area.

  E. Test

  F. Answers to test.

II. References:

A. Duncan, George H., Growing Field Crops, McGraw-Hill Book Company, Inc., New York, 1957.

B. Martin, John H. and Warren H. Leonard, Principles of Field Crop Production, The Macmillan Company, New York, 1967.

C. Smith, Harris Reason, Farm Machinery Equipment, McGraw-Hill Book Company, Inc. New York, 1965.

D. Wolfe, T.K. and M.S. Kipps, Production of Field Crops - A Textbook of Agronomy, McGraw-Hill Book Company, Inc., New York, 1959.

E. "Field and Seed Crops, Usual Planting and Harvesting Dates", United States Department of Agriculture, Agriculture Handbook No. 283, Washington, D.C. 1965.

F. "Seed Production of Some Common Field Crops", Department of Agriculture Education, Ohio State University, Columbus, Ohio, 1966.

G. "A Suggested Program of Instruction in Crops for a Six to Nine Week Mini-Course Teaching Block", Department of Agricultural Education, Kansas State University, Manhattan, Kansas, 1972.

H. "Planting Crops in Kansas", Cooperative Extension Service, Kansas State University, Manhattan, Kansas, 1977.

INFORMATION SHEET

I. Terms and definitions

A. Recommended variety - a particular hybrid of a crop proven to do well within the area.

B. Recommended planting dates - usually a range of dates proven to be most optimum for planting the particular crop in the area.

(NOTE: A range is usually give so as to allow for seasonal variation)

C. Recommended planting rates - the number of pounds of seed per acre which has been proven to be most optimum for the particular crop in that area.

D. Recommended planting depth - the number of inches deep each crop should be planted as proven through research for the particular area.

E. Recommended seed spacing - the distance in inches between seeds in a row for each crop as proven through research for the particular area.

F. Recommended planting methods - the method of planting each crop which has been proven most successful for the area.

II. Recommended varieties of common Kansas crops.

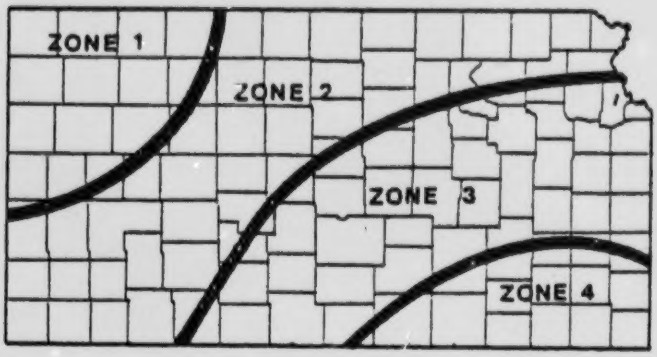
Section Of State	Winter Wheat		Winter Barley	Spring Oats		Soybeans	
	Suggested	Satisfactory	Suggested	Suggested	Satisfactory	Suggested	Satisfactory
Northwestern...	Buckskin Centurk Eagle Larned Sage	Scout 66	Kanby Nebar Paoli Will	Bates Lang Pettis Trio	Tonka	Calland Cutler 71 Williams	Clark 63
Southwestern...	Buckskin Centurk Eagle Larned Sage Newton	Bison Scout 66	Kanby Nebar Paoli Will	Pettis Trio	Tonka	Calland Cutler 71 Union Williams	Clark 63
North-Central..	Centruk Cloud Eagle Gage Homestead Larned Newton Parker Sage	Scout 66	Kanby Nebar Paoli Will	Pettis Trio	Tonka	Calland Columbus Cutler 71 Pomona Union Williams	Clark 63
South-Central..	Buckskin Centurk Eagle Homestead Larned Newton Parker Sage	Bison Scout 66 Triumph 64	Kanby Nebar Paoli Will	Pettis Trio	Tonka	Calland Columbus Cutler 71 Pomona Union Williams	Clark 63
Northeastern...	Centurk Eagle Gage Homestead Newton Parker Sage	Scout 66 Triumph 64	Kanby Nebar Paoli Will	Pettis Trio	Tonka	Calland Columbus Cumberland Cutler 71 Pomona Union Williams	Clark 63
Southeastern...	Centurk Eagle Gage Homestead Newton Parker Sage	Chanute Scout 66 Triumph 64	Kanby Nebar Paoli Will	Pettis Trio	Tonka	Calland Crawford Columbus Cutler 71 Essex Forrest Pomona Williams	Clark 63

II. Recommended varieties of common Kansas crops Continued.

Crop and Variety	Area of State
ALFALFA	
* Kanza	Entire
+ Cody	Entire
+ Bufalo	Entire
* Riley	Entire
SPRING BARLEY	
* Otis	NW, NC (W 1/2) SW, SC (W 1/2)
WINTER OATS	
* Cimarron	S 1/2 of SE
* Nora	S 1/2 of SE
SWEETCLOVER	
* Madrid	Entire
RED CLOVER	
* Kenland	NE and SE
ALSIKE CLOVER	NE and SE
LESPEDIZA	
* Korean	NE and SE
* Summit	SE
RYE	
* Balbo	Entire
* Von Lochow	Entire

* Suggested
+ Satisfactory

III. Recommended Planting Dates



PLANTING CROPS IN KANSAS - Correct date and correct planting rate are essential to successful crop production in Kansas. A range of planting dates is given here to provide for seasonal variation. In general, the earlier date of the range will apply to the eastern and southern counties of the sections and the later dates to the northern and western counties for the spring-sown crops and the reverse for the fall-sown crops.

PLANTING DATES FOR KANSAS CROPS

CROP	ZONE NO. 1	ZONE NO. 2	ZONE NO. 3	ZONE NO. 4
Wheat	Sept.10-20	Sept.10-Oct.20	Sept.25-Oct.20	Oct.5-20
Winter barley	Sept.10-20	Sept.10-Oct.5	Sept.15-Oct.10	Sept.20-Oct.10
Spring barley	Feb.25-Mar.15	Feb.25-Mar.15(W 2/3)	Feb.25-Mar.15(W 1/3)	Not recommended
Winter oats	Not recommended	Not recommended	Not recommended	Sept.20-Oct.10(S 1/2)
Spring oats	Mar.5-20	Mar.1-15	Mar.1-15	Feb.20-Mar.10
Corn	May 1-20	Apr.20-May 15	Apr.10-May 10	Mar.25-May 1
Sorghums	May 15-June 5	May 10-June 20	May 5-June 20	May 1-20
Sudangrass	May 15-July 1	May 10-July 10	May 5-July 10	Mav 1-July 10
Soybeans	May 10-June 1(irrigated)	May 5-June 5	May 5-June 10	May 10-June 25
Alfalfa				
Fall	Aug.10-30	Aug.15-Sept.10	Aug.15-Sept.10	Aug.15-Sept.10
Spring[1]	Apr.25-June 1	Apr.20-May 10	Apr.15-May 10	Apr.10-May 10
Sweetclover				
Fall	Not recommended	Aug.15-Sept.10(E 1/3)	Aug.15-Sept.10(E 1/2)	Aug.15-Sept.10
Spring[2]	Mar.5-20	Mar.1-15	Mar.1-15	Feb.20-Mar.10
Red clover[2]	Not recommended	Mar.1-15(E 1/3)	Mar.1-15(E 1/2)	Feb.20-Mar.10
Lespedeza	Not recommended	Not recommended	Mar.1-15(E 1/2)	Feb.20-Mar.10
Cool season grass				
Fall	Aug.10-Sept.10	Aug.15-Sept.15	Aug.15-Sept.15	Aug.15-Sept.25
Winter	Nov.1-Mar.1	Nov.15-Mar.1	Dec.1-Mar.1(N 1/3)	Not recommended
Spring	Mar.1-Apr.1	Feb.15-Mar.15	Feb.15-Mar.15	Not recommended
Warm season grass	Mar.25-May 25	Mar.15-May 15	Mar.1-Apr.30	Mar.1-Apr.30

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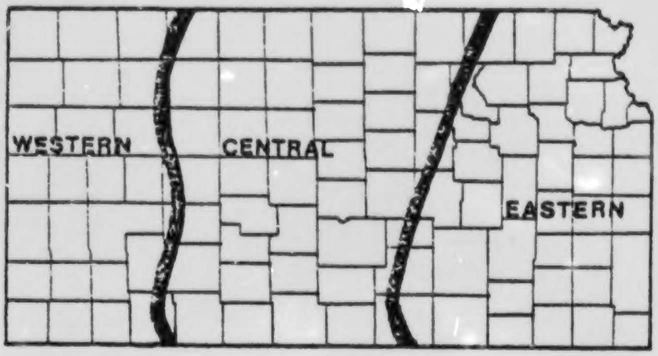
[1] Spring seedings not as desirable because of additional cost of herbicide for weed control and expected lower yields during established year.

[2] Dates recommended are for seeding with spring planted small grains or drilled into winter wheat in the spring; dates for broadcast into winter wheat should be Jan.1-Mar.1 for the entire state. For pure stands use alfalfa seeding dates.

IV, Recommended Planting Rates



PLANTING RATES FOR HIGH GERMINATING SEEDS IN KANSAS

	Western	Western	Central	Eastern
CROP	20 or less	Irrigated	30 to 20	30 or more
		(pounds per acre)		
Wheat	20-45	60	45-60	60
Winter barley	30-48	96	60-96	72-96
Spring barley	60-84	96	60-96	72-96
Winter oats	.....	.....	.....	64
Spring oats	32-48	64	48-64	64
Soybeans	.....	45-60	20-30	30-45
Sudangrass - drill	10-15	30	12-20	20-30
Sudangrass - rows	2-4	.....	5-10	.....
Alfalfa	8-10	10-15	10-15	10-15
Sweetclover	8-10	10-15	10-15	10-15
Red clover	.....	.....	.....	8-10
Lespedeza	.....	.....	.....	20-30
Smooth brome	.....	14	10-20	10-20
Tall fescue	.....	.....	10-15	10-15
Native grasses (pure live seed basis)				
Switchgrass	15-20	.....	10-20	6-10
Buffalograss (treated)	15-20	.....	15-20	.....
Native mixture and chaffy grasses	See county agent, experiment station, or SCS representative			

IV. Planting Rates Continued

Seed Spacings required to obtain harvest populations of from 10,000 to 28,000 plants per acre.

Harvested population	Seeds/acre[1] planted	Row width, inches		Row width, inches	
		30	36	30	36
		seed spacing, inches		seeds/10 ft. of row	
10,000	11,800	17.75	14.75	7	8
12,000	14,100	14.75	12.25	8	10
14,000	16,500	12.50	10.50	10	11
16,000	18,800	11.00	9.25	11	13
18,000	21,200	9.75	8.25	12	14
20,000	23,500	9.00	7.50	13	16
22,000	25,900	8.00	6.75	15	18
24,000	28,200	7.50	6.25	16	19
26,000	30,600	6.75	5.75	18	21
28,000	32,900	6.25	5.25	19	23

[1] Assuming high germination and that 85% of seeds produce plants.

CORN

Populations and Seed Spacings

Northwest and Central	10,000 to 15,000[1]
Eastern	15,000 to 20,000[2]
Irrigated	20,000 to 28,000[3]

[1] Recommendations only for bottomland soils.

[2] Recommendations for southeast to northeast.

[3] Rates above 24,000 are for early-maturing hybrids only.

GRAIN SORGUMS - Plant and Seed Spacings

Recommended population and spacing	Western less than 20 in. precip.	West Central 20-26 in. precip.	East Central 26-32 in. precip.	Eastern more than 32 in. precip.	Irrigated
Plant population plants/acre	24,000	35,000	45,000	70,000	100,000
Within row seed spacing at planting					
20-inch rows	8.5	6	4.5	3	2
30-inch rows	5.5	4	3	2	1.5

V. Recommended planting depths of common Kansas crops.

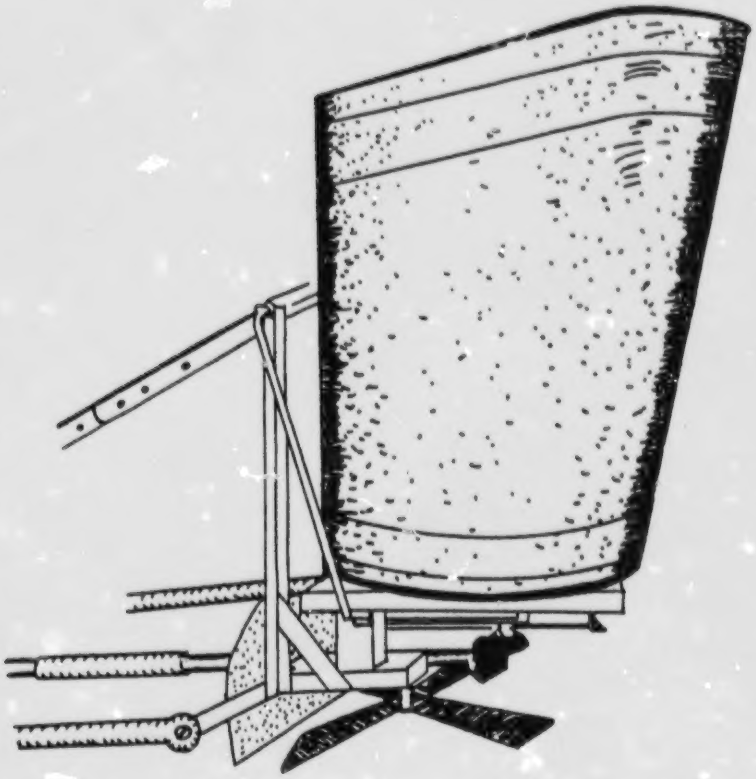
A. Wheat- 1-2 inches
B. Barley- 1-2 inches
C. Rye- 1-2 inches
D. Oats- 1-2 inches
E. Corn- 1-3 inches
F. Grain Sorghum- 1-2 inches
G. Forage Sorghum- 1-2 inches
H. Sudangrass- 3/4-1/2 inches
I. Soybeans- 1-2 inches
J. Alfalfa- 1/4-3/4 inches
K. Clover- 1/4-3/4 inches
L. Lespedeza- 1/4-1/2 inches
M. Grasses- 1/4-1/2 inches

(NOTE: Crops are usually planted shallow in clay soils and deep in sandy soild. Temperature, moisture, and oxygen affects the rate of germination.)

VI. Recommended seeding space and method of planting for common Kansas crops.

A. Wheat - dril spacing using grain drill
B. Barley - drill spacing using grain drill
C. Rye - drill spacing using grain drill
D. Oats - drill spacing using grain drill or broadcasting
E. Corn - 6-13 inches between seeds using row planter
F. Grain Sorghum - 1-31 inches between seeds using row planters
G. Forage Sorghum - drill spacing using grain drill or broadcasting
H. Sudangrass - drill spacing using grain drill or broadcasting
I. Soybeans - 4-6 inches and drill spacing, using row planter or grain drill
J. Alfalfa - drill spacing or broadcasting, using grain drill or roadcast method
K. Clovers - drill spacing or broadcasting, using grain drill or broadcasting method
L. Lespedeza - drill spacing or broadcasting, using grain drill or broadcasting method
M. Grasses - drill spacing or broadcasting, using grain drill or broadcasting method.

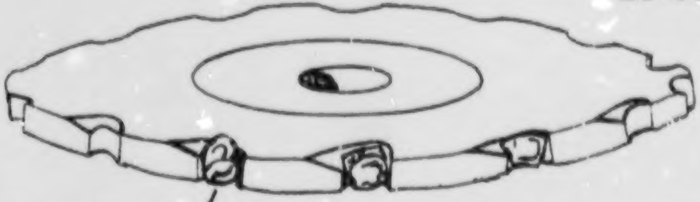
POWER - DRIVE SEEDER BROADCAST



OPERATED FROM POWER—TAKE—OFF. OPERATES SIMILAR TO KNAPSACK BROADCAST SEEDER.

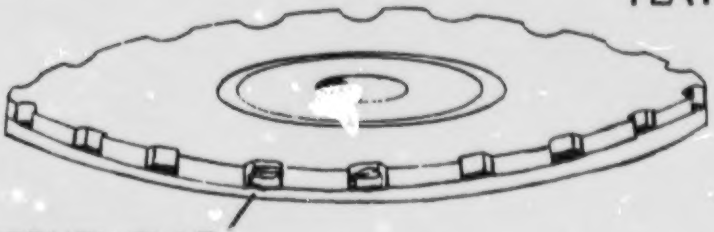
CORN SEED PLATES

EDGE—DROP PLATE



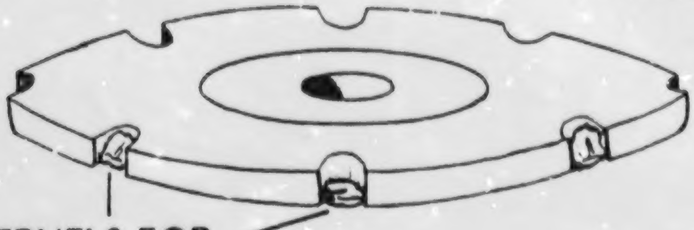
CORN KERNEL ON EDGE

FLAT—DROP PLATE



CORN KERNEL FLAT

FULL—HILL DROP PLATE



CORN KERNELS FOR
HILL PLANTING

CROP PLANTING
UNIT V

ASSIGNMENT SHEET #1 - COLLECT TEN PICTURES OF VARIOUS KINDS OF CROP PLANTING EQUIPMENT TYPICAL IN YOUR LOCAL AREA.

Following completion of the collection, present it to the instructor for evaluation.

CROP PLANTING
UNIT V

TEST

1. Define the following four terms related to crop planting:
   - a. Recommended variety -
   - b. Recommended planting data -
   - c. recommended planting depths -
   - d. Recommended planting methods -

2. List two recommended varieties in your local area for the following crops:
   - a. Wheat
   - b. Alfalfa
   - c. Soybeans
   - d. Clover

3. List the recommended planting dates in your local area for the following five crops:
   - a. Wheat
   - b. Corn
   - c. Grain sorghums
   - d. Oats (spring)
   - e. Soybeans

4. List recommended planting rates in your local area for these five crops.
   - a. Wheat
   - b. Corn
   - c. Soybeans
   - d. Oats (spring)
   - e. Grain sorghum

5. Match the ten crops below with their recommended planting depths.

______a. Wheat
______b. Corn
______c. Alfalfa
______d. Soybeans
______e. Grain sorghum
______f. Clover
______g. Forage sorghum
______h. Oats
______i. Grasses
______j. Sudangrass

1. 1/4-3/4 inches
2. 1-2 inches
3. 1-3 inches
4. 1/4-1/2 inches
5. 3/4-1/2 inches

6. List the recommended seed spacings for these five common Kansas crops.

a. Corn
b. Grain Sorghum
c. Soybeans
d. Wheat
e. Alfalfa

7. List the recommended planting methods for the following ten common Kansas crops.

a. Wheat
b. Corn
c. Alfalfa
d. Soybeans
e. Grain Sorghum
f. Clover
g. Forage Sorghum
h. Oats
i. Grasses
j. Sudangrass

CROP PLANTING
UNIT V

ANSWERS TO TEST

1. a. A particular hybrid of a crop proven to do weill within the area.

   b. Usually a range of dates proven to be most optimum for planting the particular crop in the area.

   c. The number of inches deep each crop should be planted as proven through research for the particular area.

   d. The methods of planting each crop which have been proven most successful for the area.

2. Any of the following depending on the area of Kansas:

   a.

Eastern	Central	Western
Centurk	Bison	Buckskin
Eagle	Centurk	Centurk
Gage	Eagle	Eagle
Homestead	Gage	Larned
Newton	Larned	Sage
Parker	Newton	Scout 66
Sage	Parker	Shawnee
Scout 66	Scout 66	

   b. Any of the following:

   Buffalo
   Cayuga
   Cody
   Du Puits
   Gum
   Kanza
   Ranger
   Riley

   c. Any of the following:

   Calland
   Clark 63
   Cutler 71
   Williams
   Union

   d. Any of the following:

   Madrid sweetclover
   Kenland red clover
   Alsike clover

3. Any of the following:

	ZONE NO. 1	ZONE NO. 2	ZONE NO. 3	ZONE NO. 4
a.	Sept. 10-20	Sept. 10-Oct. 20	Sept. 25-Oct. 20	Oct. 5-20
b.	May 1-20	April 20-May 15	Apr. 10- May 10	Mar. 25-May 1
c.	May 15-June 5	May 10-June 20	May 5-June 20	May 1-20
d.	Mar. 5-20	Mar. 1-15	Mar. 1-15	Feb. 20-Mar. 10
e.	May 10-June 1 (irrigated)	May 5-June 5	May 5-June 10	May 10-June 25

4. Any of the following:

	Western	Irrigated	Central	Eastern
a.	20-45 lbs./acre	60 lbs./acre	45-60 lbs./acre	60 lbs./acre
	10,000 to 15,000 seeds/acre	20,000 to 28,200 seeds/acre	10,000 to 15,000 seeds/acre	15,000 to 20,000 seed/acre
	Not recommended	45-60 lbs./acre	20-30 lbs./acre	30-45 lbs./acre
	32-48 lbs./acre	64 lbs./acre	48-64 lbs./acre	64 lbs./acre
	24,000 plants/acre	100,000 plants/acre	35,000 to 45,000 plants/acre	70,000 plants/acre

5. a. 2
   b. 3
   c. 1
   d. 2
   e. 2
   f. 1
   g. 2
   h. 2
   i. 4
   j. 5

6. a. 6-13 inches
   b. 1-31 inches
   c. 4-6 inches
   d. drill spacing
   e. drill spacing or broadcast spacing

7. a. grain drill
   b. row planter
   c. grain drill or broadcasting
   d. row planter or grain drill
   e. row planters or grain drill
   f. grain drill or broadcasting
   g. grain drill or broadcasting
   h. grain drill or broadcasting
   i. grain drill or broadcasting
   j. grain drill or broadcasting

ESTABLISHING AND IMPROVING TAME PASTURES
UNIT IV

TERMINAL OBJECTIVE

After completion of Unit IV, the student should be able to survey his home farm and select the most desirable tame pasture plant in order to increase the production of forage growth. He should be able to visit the county ASCS office and interpret the policies of the REAP program for pasture improvement. He should be able to select the correct fertilizer and herbicide to use on his home farm and community. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the post test.

SPECIFIC OBJECTIVES

After completion of instruction, the student should be able to:

1. Match terms associated with tame pasture to the correct definition.
2. Name three advantages of tame pastures.
3. Select from a list of alternatives tame pasture plants.
4. Name five steps to follow in preparing the ideal seedbed for pasture improvement.
5. Select the proper fertilizer to use as a starter fertilizer when given soil test information and the type of pasture plants.
6. Select the proper fertilizer to use in top dressing tame pasture plants.
7. Name the two methods of weed and brush control and discuss each one.
8. Name three advantages of renovating pasture land.
9. Name three methods to follow in order to increase production of forage growth.
10. Name three advantages of overseeding tame pastures.
11. Select the proper herbicide to use in controlling weeds and brush.
12. Discuss in a short paragraph the function of the county (ASCS) Agricultural Stabilization and Conservation Service in relationship to his farming operation.
13. Calculate the cost of establishing a tame pasture program on a given acre of land when certain conditions are defined.

14. Demonstrate the ability to recommend improvement practices for a given pasture through surveying the pasture and giving a discussion of the findings.

15. Demonstrate the ability to survey a native rangeland taking into consideration the site, degree of utilization, topography, and the climatic condition of the area. From the findings recommend the type of plant to use in changing from a rangeland area to a tame pasture area.

16. Demonstrate the ability to visit the county ASCS office and interpret the policies of REAP Programs.

ESTABLISHING AND IMPROVING TAME PASTURES
UNIT IV

SUGGESTED ACTIVITIES

I. Instructor:

  A. Provide students with objective sheet.

  B. Provide students with information and assignment sheets.

  C. Discuss information and assignment sheets.

  D. Discuss terminal and specific objectives.

  E. Arrange field trip to allow students an opportunity to visit the county ASCS office. Also allow students an opportunity to survey native rangeland for possibility of converting into a tame pasture program.

  F. Give test.

II. Students:

  A. Read objectives.

  B. Study information sheets.

  C. Work assignment sheets and turn in to instructor for grading.

  D. Participate in field trip.

  E. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

  A. Objectives

  B. Information sheets

  C. Assignment sheets

    1. Assignment Sheet #1-Visit County ASCS Office

    2. Assignment Sheet #2-Calculate the Cost of Establishing a Tame Pasture Program

    3. Assignment Sheet #3-Survey a Tame Pasture and Recommend Improvement Practices

    4. Assignment Sheet #4-A Survey for Changing Native Rangeland into a Tame Pasture

D. Test

E. Answers to test

II. References:

A. McVickar, M.H. and J.S. McVickar. Approved Practices in Pasture Management. Danville, Illinois: The Interstate Printers and Publishers, Inc.

B. Donahue, Roy L., Follett, Roy H., Tulloch, Rodney W. Our Soils and Their Management. Danville, Illinois: The Interstate Printers and Publishers, Inc.

ESTABLISHING AND IMPROVING TAME PASTURES
UNIT IV

INFORMATION SHEET

I. Terms and definitions

   A. Site - An area of land having a combination of climatic, topographic, and natural biotic factors significantly different from adjacent areas.

   B. Starter fertilizer - A fertilizer used before or at the time of planting which provides the proper amount of nutrients for beginning plants.

   C. REAP - A program funded and operated by the county ASCS office which provides assistance to farmers and ranchers on a cost-share basis.

   D. Subsoiling - The breaking of compact subsoils without turning them over, using a special narrow cultivator shovel or chisel.

   E. Renovating - A practice of loosening the soil to allow the movement of water and air more freely and to control weeds.

   F. Herbicide - A chemical developed to control weeds

II. Advantages of tame pastures

   A. Increases carrying capacity of the land

   B. Increases rate of gain

   C. Allows overseeding with legumes which prolongs grazing season

III. Tame pasture plants for Kansas

   A. Smooth Bromegrass

      1. A cool season grass

      2. Extremely popular in Eastern Kansas

      3. Needs irrigation in Western Kansas

      4. Seed at 10-14#/acre

   B. Western Wheatgrass

      1. Especially adapted to dry conditions

      2. Well adapted to spring and fall grazing

      3. Seed at 6-10 pounds per acre

IV. Tame Grass for Eastern half of Kansas

   A. Fescue

      1. Cool season-early spring, winter
      2. Easily established on cultivated ground
      3. Seed at 6# pure live seed/acre

   B. Orchardgrass

      1. Perennial bunch grass
      2. Palatable in very early spring

V. Tame Grass for Western one-half Kansas

   A. Perennial Rhygrass
   B. Blue Grama

VI. Seedbed preparation

   A. Remove trees and/or shrubs

      (NOTE: If trees are large, a practice of root plowing might become necessary.)

   B. Plow soil if weeds are a problem
   C. Use disk if soil is loose and not infested with weeds
   D. Use harrow or drag and level land
   E. Use roller to firm soil.

VII. Starter fertilizers

   A. 10-10-10

      (NOTE: Fertilizer at or near planting is very beneficial for promoting early stand development. All phases of growth from tilling to early forage and seed production are enhanced by proper starter fertilizer programs. Be sure to use soil test data before making the fertilizer recommendation.)

VIII. Fertilizer for top dressing

   A. It is recommended that there be 70-120 pounds N, 30-50 pounds of phosphate, and 10-30 pounds potassium available per acre for maximum grass production in almost all areas of Kansas. Usually topdress with nitrogen.

   B. Lovegrass - 50-100 lbs. nitrogen one to four times per year

      (NOTE: Top dressing should be applied according to pasture utilization, rainfall, and soil test information.)

IX. Methods of weed and brush control

   A. Mechanical - Removing by some type of mechanical practices such as mowing, burning, or plowing under.

   B. Chemical - Removing by means of applying a selective herbicide.

X. Advantages of renovating

   A. Reduces competition of other plants

   B. Provides for more available nutrients

   C. Increases movement of air and water

XI. Methods to increase forage production

   A. Overseed with legumes and small grains

   B. Protect from overgrazing through pasture rotation

   C. Establish a practice of fertilization

   D. Control weeds and brush

XII. Advantages of overseeding

   A. Serves as a companion crop

   B. Provides grazing value until pasture becomes established

   C. Furnishes nitrogen for the grass

XIII. Herbicides for weed and brush control

   A. Weeds

      1. 2, 4, D - Apply when weeds are vigorously growing after sprigging

      2. Karmex (Diuron) - Use as a preemergence; apply after sprigging and before weeds emerge

      3. Princep (Simazine) - Apply early in season before weeds germinate

      (CAUTION: Be sure to read all labels and follow manufacturer's recommendations before applying.)

   B. Brush

      1. Buckbrush, sagebrush, sumac; apply 2, 4-L to foliage in spring while brush is growing actively - usually from April 20 to May 10.

      2. Oak species, osage orange, 2, 4, 5-T - apply to foliage.

      3. Small hedge, red cedar, locust-cut surface and/or frill bark, treat with 2, 4, 5-T. Mix with #2 or #3 fuel oil. Apply to frilled or cut area on lower 12 to 24 inches of trunk of runoff.

(CAUTION: Be sure to read all labels and follow manufacturer's recommendations before applying.)

XIV. ASCS practices

A. County operated

B. Establishes practices and policies for helping farmers and ranchers

C. Operated by a county committee elected from county participants

D. Practices cover

1. Clearing land
2. Establishing pastures
3. Building ponds and terraces
4. Sharing in the cost of seeds, fertilizers, and agricultural lime

E. Additional practices

1.
2.
3.
4.

F. County office located____________________

G. County office manager____________________

ESTABLISHING AND IMPROVING TAME PASTURES
UNIT IV

ASSIGNMENT SHEET #1 - VISIT COUNTY ASCS OFFICE

Every farmer or potential farmer should become acquainted with the programs and policies of the County ASCS office. Schedule a visit to the county office and answer the following questions. When completed return to instructor for his evaluation and for discussion purposes.

What is the minimum rate of cost-sharing on each of the following practices

1. Sodding or sprigging________________
2. Seeding grasses or legumes
    a. Korean lespedeza________________
    b. Smooth brome grass ________________
    c. Western wheatgrass ________________
    d. Orchard grass ________________
    e. Fescue ________________
    f. Perennial ryegrass ________________
    g.
    h.
3. Application of fertilizer ________________
4. Application of agricultural limestone ________________
5. Root plowing or undercutting ________________
6. Application of herbicides ________________

ESTABLISHING AND IMPROVING TAME PASTURES
UNIT IV

ASSIGNMENT SHEET #2 - CALCULATE THE COST OF ESTABLISHING A TAME PASTURE PROGRAM

Suppose you were a farmer and wanted to convert 40 acres of native rangeland into some type of pasture program. Approximately 20 acres of the 40 acres were covered with shinnery oak and blackjack. The soil test information revealed that you would need to apply 200 pounds of 10-20-10 fertilizer and need 2000 pounds of lime per acre. Using your local county ASCS programs, what would be the total cost of sprigging 40 acres of bermudagrass? (At this time you are not planning on overseeding.) Complete the work and turn in to the instructor for his evaluation.

1. What will the cost of removing the trees be? ________________
2. What was the cost of the fertilizer? ________________
3. What was the cost of the sprigging? ________________
4. What was the cost of the agricultural lime? ________________
5. What will the root plowing cost be if necessary? ________________
6. What will be the cost of seedbed preparation? ________________
7. What will be the total cost of sprigging the 40 acres? ______________
8. What percent of the total cost will the county ASCS pay? ________________
9. If the county ASCS pays ________________ and the total cost involved in converting the 40 acres of rangeland into a tame pasture is ______________, what will be the cost to you as a farmer?____________________

ESTABLISHING AND IMPROVING TAME PASTURES
UNIT IV

ASSIGNMENT SHEET #3 - SURVEY A TAME PASTURE AND RECOMMENDED IMPROVEMENT PRACTICES

Schedule a visit to a farm and survey the tame pasture and answer each of the following questions based on your survey.

1. What is the approximate number of acres in the field?________________
2. What is the most predominant vegetation?__________________
3. What is the condition of the vegetation?__________________
4. What type of livestock is utilizing the pasture?_______________
5. What is the number of head per acre presently utilizing the field?_________________
6. Is there an abundance of legumes present with the tame pasture grasses.______________ If yes, what type of legume is present?__________
7. Does the pasture show indications of weeds and brush being a problem?_________________

Using the information collected above, recommend practices for improvement of forage production. When completed turn in to instructor for his evaluation.

1.
2.
3.

ESTABLISHING AND IMPROVING TAME PASTURES
UNIT IV

ASSIGNMENT SHEET #4 - A SURVEY FOR CHANGING NATIVE RANGELAND INTO A TAME PASTURE

Survey a native rangeland and determine the kind of site, degree of utilization, and indicate the range condition. From this information and by taking into consideration topography of the land and the climatic condition, what type of tame pasture plant would you recommend? When completed return to instructor for his evaluation. Place an "X" in each blank indicating your findings.

1. Kind of range site

    ______ Bottomland

    ______ Loamy or sandy prairie

    ______ Hardland or clay pan prairie

    ______ Very shallow or rocky

    ______ Savannah or rocky savannah

    ______ Very steep slopes or ridges

    ______ Red clay prairie

    ______ Deep sand or sandy savannah

    ______ Rough broken or breaks

2. Degree of utilization

    ______ Unused

    ______ Light

    ______ Moderate

    ______ Close

    ______ Severe

    ______ Destructive

3. Range condition class

   ______ Excellent

   ______ Good

   ______ Fair

   ______ Poor

4. What is the average rainfall of area? ______________

5. What is the topography of the land? _______________

6. What type of tame pasture plant would you recommend for the area? Before you answer this question, you might wish to refer back to the information sheets.

ESTABLISHING AND IMPROVING TAME PASTURES
UNIT IV

TEST

1. Match the terms on the right to the correct definition.

______a. The breaking of compact subsoils without turning them over using a special narrow cultivator shovel or chisel

______b. A chemical developed to control weeds

______c. An area of land having a combination of climatic, topographic, and natural biotic factors, significantly different from adjacent areas

______d. A program funded and operated by the county ASCS office which provides assistance to farmer and ranchers on a cost-share basis

______e. A fertilizer used before or at the time of planting which provides the proper amount of nutrients for beginning plants

______f. A practice of loosening the soil to allow the movement of water and air more freely and to control weeds

1. Site
2. Starter fertilizer
3. REAP
4. Renovating
5. Herbicide
6. Subsoiling

2. Name three advantages of tame pastures.

a.

b.

c.

3. Place an "X" by the plant which is considered to be a tame pasture plant

______a. Smooth bromegrass

______b. Big bluestem

______c. Switchgrass

______d. Western wheatgrass

______e. Scribners panicum

4. Name five steps to follow in preparing the ideal seedbed for pasture improvement

a.

b.

c.

d.

e.

5. Select a fertilizer from the list on the right that would serve as a starter fertilizer for tame pastures. Write the number in the blank provided.

a.__________

1. 82-0-0
2. 10-20-10
3. 30-40-40
4. 20-20-0

6. Select a fertilizer from the list on the right that would serve as top dresser for tame pasture. Write the number in the blank provided.

a.__________

1. 82-0-0
2. 10-20-10
3. 30-40-10
4. 33-0-0

7. Name the two methods of weed and brush control and discuss each one.

a.

b.

8. Name three advantages of renovating pasture land.
   a.
   b.
   c.

9. Name three methods to follow in order to increase production of forage growth.
   a.
   b.
   c.

10. Name three advantages of overseeding tame pastures.
    a.
    b.
    c.

11. What herbicide on the right would be used to control weeds and brush in the following pastures? Place the number in the blank provided.

______a. Brome grass pasture infested with osage orange

______b. Fescue infested with vigorously growing weeds following sprigging

______c. Western wheat grass buckbrush

1. 2, 4-D
2. 2,4,5-T

12. Discuss in a short paragraph the function of the county ASCS office in relationship to you as a farmer.

13. Demonstrate the ability to:
    a. Calculate cost of establishing tame pasture.
    b. Visit County ASCS office.
    c. Survey and recommend pasture improvements.

ESTABLISHING AND IMPROVING TAME PASTURES
UNIT IV

ANSWERS TO TEST

1. 6 a.
   5 b.
   1 c.
   3 d.
   2 e.
   4 f.

2. a. Increases carrying capacity of the land
   b. Increases rate of gain
   c. Overseeding with legumes increases grazing season

3. a. Smooth bromegrass
   b. Western wheatgrass

4. a. Remove trees and shrubs
   b. Plow soil if weeds are a problem
   c. Use disk if soil is loose and not infested with weeds
   d. Use harrow or drag and level land
   e. Use roller to provide a firm soil

5. a. 2,3

6. a. 1,4

7. a. Mechanical - Removing by some type of mechanical practice such as mowing, burning, or plowing under
   b. Chemical - Removing by means of applying a herbicide

8. a. Reduces competition of other plants
   b. Provides for more available nutrients
   c. Increases movement of air and water

9. Any three of the following:
   a. Overseed with legumes
   b. Protect from overgrazing through pasture rotation
   c. Establish a practice of fertilization
   d. Control weeds and brush

10. a. Serves as a companion crop
    b. Provides grazing until pasture becomes established
    c. Furnishes nitrogen for the grass

11. a. 2
    b. 1
    c. 1

12. The discussion should contain the following statements:
    a. County operated
    b. Operated by a county committee elected from county participants
    c. Establishes practices and policies for helping farmers and ranchers

13. Performance skills will be evaluated by the instructor.

IMPROVING NATIVE RANGELAND
UNIT III

TERMINAL OBJECTIVE

After completion of Unit III, the student should be able to survey native rangeland and determine the kind of site, degree of utilization, and the indication of range conditions. He should be able to develop plans for increasing the productivity and recommend control practices. This knowledge will be evidenced through deomonstration and by scoring eighty-five percent on the post test.

SPECIFIC OBJECTIVES

After completion of instruction, the student should be able to:

1. Match terms associated with rangland to the correct definition.
2. Name five factors that affect forage growth.
3. Name six practices to follow in order to improve grazing distribution.
4. Name five principles of range management.
5. List two advantages and two disadvantages of prescribed range burning.
6. List two advantages and two disadvantages of nitrogen range fertilization.
7. Discuss what is meant by animal unit.
8. Describe four climax changes in range land.
9. Classify range plants according to their characteristics for season, climax, and grazing value.
10. Name the big five grasses that make up the tall grass prairie.
11. Name the four major problems of overgrazing.
12. Discuss in a short paragraph what effect the percent of plant removed has on the next year's growth.
13. Name three ways to prevent overgrazing.
14. Match the different systems of grazing to the correct definition.
15. Match the terms associated with kinds of range sites to the correct definition.
16. Match terms indicating degree of utilization to the correct definition.
17. Match terms indicating range condition to the correct definition.
18. Demonstrate the ability to collect and identify rangeland plants; tell if the plant is an annual or perennial; cool or warm season; decreaser, increaser, or invader; and if the plant is either good, fair, or poor as far as grazing value is concerned.
19. Demonstrate the ability to survey a native rangeland; determine kinds of site, degree of utilization, and indicate range conditions; and recommend control practices for improving the productivity of the range.

IMPROVING NATIVE RANGELAND
UNIT III

SUGGESTED ACTIVITIES

I. Instructor:
   - A. Provide students with objective sheets.
   - B. Provide students with information and assignment sheets.
   - C. Discuss terminal and specific objectives.
   - D. Discuss information and assignment sheets.
   - E. Arrange field trip to allow students an opportunity to collect and identify rangeland plants and to survey native rangeland.
   - F. Give test.

II. Students:
   - A. Read objectives.
   - B. Study information sheets.
   - C. Work assignment sheets and turn in to instructor for grading.
   - D. Participate in field trip.
   - E. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:
   - A. Objectives
   - B. Information sheets
   - C. Transparency masters
     - 1. TM 1 - Major Flint Hills Range Sites
     - 2. TM 2 - Major Western Kansas Range Sites
   - D. Assignment Sheets#1 - Collect and Identify Rangeland Plants
     - 1. Assignment Sheet #1 - Collect and Identify Rangeland Plants
     - 2. Assignment Sheet #2 - Survey Native Rangeland
   - E. Test
   - F. Answers to test

II. References

A. McVickar, M.H. and J.S. McVickar. *Approved Practices in Pasture Management*. Danville, Illinois: The Interstate Printers and Publishers, Inc.

B. Donahue, Roy L., Follett, Roy H., Tulloch, Rodney W. *Our Soils and Their Management*. Danville, Illinois: The Interstate Printers and Publishers, Inc.

C. Rommam, Loren, Wilfred W. McMurphy, Ernest Snook, and David Ankle. *Pasture and Range Judging in Oklahoma*, Oklahoma State University Extension, Stillwater, Oklahoma E820

D. Nichols, James T. Peter N. Jensen, J. Stubbendieck, *Range Judging Handbook for Nebraska*, University of Nebraska Extension, Lincoln, Nebraska, EC 1-37-78

E. Perry, L. J.J. Stubbendieck, *Nebraska Handbook of Range Management*, University of Nebraska Extension, Lincoln, Nebraska, EC 78-101

G. Hyde, Robert M. *Range Judging and Plant Identification*, Kansas State University Extension, Manhattan, Kansas, C-412

H. *Kansas Standards and Specifications for Prescribed Burning* - 338 (AC), Section IV TG Notice KA-45, VSDA Soil Conservation Service

IMPROVING NATIVE RANGELAND
UNIT III

INFORMATION SHEET

I. Terms and definitions

A. Warm-season plant - One which grows during the summer and early fall.

B. Cool-season plant - One which grows during the fall, winter, or spring.

C. Range - Land which supports plants suitable for use as forage by domestic livestock or wildlife

D. Native plant - One originating in North America

E. Introduced plant - One brought in from countries outside the United States.

F. Decreaser - A plant that decreases in population on a range when exposed to heavy grazing pressures.

G. Increaser - A plant that increases in population on a range when decreasers are reduced.

H. Invader - A plant which comes into a range after both increasers and decreasers have been reduces, usually less desirable grasses, forbs, and woody species.

I. Grazing Value - The worth of a plant for livestock production.

J. Range condition - The ecological state of health of rangeland.

K. Site - An area of land having a combination of climatic, topographic, and natural biotic factors which supports a specific combination of plants and forage production level.

L. Palatability - The tastiness of grass plant.

(NOTE: Palatability of a plant is influenced by its stage of growth, growing conditions, and range composition)

II. Factors affecting forage growth

A. Precipatation

B. Soil Nutrients

C. Topography

D. Texture of soil

E. Structure of soil

F. Light

G. Temperature

III. Practices for improved grazing distribution

   A. Salt licks and oilers located away from desirable areas

   B. Winter feeding in less desirable areas

   C. When appropriate, controlled burning and fertilizing

   D. Adequate and well-placed water supplies

   E. Rotation grazing

   F. Fencing

IV. Principles of range management

   A. Stock according to forage production.

   B. Manage according to growth habits and palatability to livestock.

   C. Select proper grass for management goals.

   D. Use periodic rest to maintain or improve pastures.

   E. Protect against overgrazing palatable grasses.

   F. Protect against overgrazing just prior to and at seeding time.

   G. Protect against overgrazing; do not damage root supply.

   H. Moderately graze; take 50 percent and leave 50 percent.

   I. Protect against uncontrolled burning.

   J. Practice brush control.

   K. Prescribed burning

   L. Nitrogen range fertilization

V. Prescribed range burning

   A. Advantages of prescribed range burning

      1. Increases livestock performance
      2. Controls undesirable weed and brush species
      3. Provides grazing distribution
      4. Improves forage quality

   B. Disadvantages of burning if not used properly

      1. Increases soil erosion
      2. Increases air pollution
      3. Reduces soil moisture
      4. Destroys natural habitat of small animals

   C. Time of burning

      1. Burn April to early May when desirable species have just initiated growth

(NOTE: Prescribed burning is done under state regulations obtained from Extension Specialist, Range and Pasture Management Cooperative Extention Service, Department of Agronomy, Manhattan, Kansas)

VI. Nitrogen Range Fertilization

A. Advantages

1. Makes more efficient use of available water
2. May cause greater root exploration
3. Higher N. content in the forage
4. Increases dry matter yeilds
5. May cause greater beef gains per acre
6. Elongates the period of active plant growth
7. Improves carrying capacity

B. Disadvantages

1. Allows for increase competition from weeds
2. Allows for increase competition from cool season grasses
3. Fertilizer hard to acquire and very expensive

C. Time of fertilizing

1. When desirable species have initiated growth

(NOTE: Not recommended on unburned pastures)

VII. Animal unit - Equal to a 1000-pound cow; a cow will consume approximately 750 pounds of dry matter per month.

VIII. Climax changes

A. Tall grasses, first to leave

B. Short grasses, second to leave

C. Weeds, third to leave

D. Shrubs, fourth to leave

IX. Characteristics of Range Plants

			Season				Climax			Grazing Value		
	Perennial	Annual	Cool	Warm	Native	Introduced	Decreaser	Increaser	Invader	Good	Fair	Poor
Annual brome		x	x			x			x			x
Annual threeawn		x		x	x				x			x
Big bluestem	x			x	x		x			x		
Blue grama	x			x	x			x		x		
Broomsedge bluestem	x			x	x				x			x
Buffalograss	x			x	x			x		x		
Eastern gamagrass	x			x	x		x			x		
Indiangrass	x			x	x		x			x		
Little bluestem	x			x	x		x			x		
Perennial threeawn	x			x	x				x			x
Prairie cordgrass	x			x	x		x				x	
Sand Bluestem	x			x	x		x			x		
Sand dropseed	x			x	x			x			x	
Sideoats grama	x			x	x			x		x		
Switchgrass	x			x	x		x			x		
Tall dropseed	x			x	x			x		x		
Catclaw sensitive brier	x			x	x		x			x		
Leadplant	x			x	x		x			x		
Scurfpea	x			x	x		x				x	
Blacksampson	x			x	x		x			x		
Broom snakeweed	x			x	x				x			x
Compassplant	x			x	x		x			x		
Dotted gayfeather	x			x	x			x			x	
Ironweed	x			x	x				x			x
Western ragweed	x			x	x				x			x

X. Tall grass prairie grasses
   - A. Big bluestem
   - B. Little bluestem
   - C. Indiangrass
   - D. Switchgrass
   - E. Sideoats

XI. Problems of overgrazing
   - A. Reduces forage quality and production
   - B. Reduces available carbohydrates for new growth the following year
   - C. Packs ground and reduces water intake
   - D. Causes animal problems by reducing:
     1. Birth weight
     2. Rate of gain
     3. Weaning weight
     4. Milk production
     5. Fertility - conception rates
     6. Calf-lamb crop percent
     7. Mature body weight

XII. Effect of plant removal on next year's growth
   - A. Seventy-five percent of plant is needed to grow ten percent of the root system
   - B. During grazing, tip removed first

     (NOTE: When cattle graze broadleaf plants, the first part of the plant removed is the bud. This causes lateral branching which produces new growth. However, if grazing continues, the plant becomes thickened and the animal will be unable to get to the vegetation.)
   - C. Estimated to take fifty percent and leave fifty percent
   - D. Under heavy grazing, plants lose vigor

XIII. Prevention of overgrazing
   - A. Stocking rate
   - B. Grazing distribution
   - C. Use of rest

XIV. Grazing systems

A. Year-long - A practice of leaving cattle on the range for a twelve-month period

B. Deferred - A practice of reserving part of the range for later use.

C. Seasonal - A practice of leaving cattle on the range during the growing season.

D. Rotational - A practice of rotating grazing to accomplish range management objectives.

E. Double stocking - the practice of grazing twice as many animal units, as they can handle but only utilizing the range for half of the grazing season.

F. Combination stocking - the practice of grazing different livestock classes in combination to gain added efficiency in utilization. (sheep-cattle)

XV. Kinds of range sites

A. Lowland - Located along creeks and rivers, subject to overflow, very productive, and capable of producing large amounts of forage plants such as little bluestem, big bluestem, switchgrass, and indiangrass.

(NOTE: Grasses such as sideoats, grama, blue grama, buffalograss, and others would be considered increasers if found growing on this location)

B. Loamy or sandy prairie - soil is loamy or sandy textured with good, deep sub-soil, highly productive main grasses such as a little or big bluestem, indiangrass, switchgrass, sideoat grama, blue grama, and buffalograss.

C. Rocky savannah - Vegetation area between forest and prairie grassland with some scattered trees and native grasses.

D. Sands - Soils with coarse texture that take water readily with woody shrubs and tall grasses.

E. Clay upland - Soils that have medium or fine textures top soils, moderate or deep subsoils, sites are nearly level to gently sloping upland.

F. Shallow limey - Soil less than 10 inches deep and very rocky and rough; production very low and will not stand heavy grazing.

G. Claypan - Soils that have relatively deep, fine textured top soils, overlaying a dense, fine textured subsoil; sites are nearly level to gently sloping uplands.

H. Loamy Upland - Deep loamy soils having a good water-plant relationship for forage production; sites are nearly level to rolling uplands.

I. Limey upland - Soils that are moderately deep and fine textured; provides good moisture; plant relationship to vegetation for forage production; sites are gently sloping to rolling uplands.

J. Saline Subirrigated - Soils with a high salt content near the surface, vary widely in texture and depth; sites occur on nearly level bottom lands, upland basins, and foot slopes.

K. Red clay prairie - Soils are red in color with rolling and broken topography with some gentle slopes wich support such grasses as buffalograss, blue grama, hairy grama, big bluestem, indiangrass, little bluestem, and switchgrass.

L. Breaks - Steep, rough, shallow, and useable land production very low.

(NOTE: Short and mid grasses are found growing on these areas.)

(NOTE: For local site descriptions contact local Soil Conservation Service.)

XVI. Utilization Levels

A. Unused - No livestock use

B. Light - Only a part of the tops of the plants grazed and less than 25 percent of the forage removed

C. Close - Good range plants grazed closely and more than one-half of year's growth removed

D. Severe - Good range plants grazed from 1 to 2 inches in height and more than 75 percent of main forage growth removed

E. Destructive - Death loss of primary species, only remnants of good plants surviving, low-order weeds have taken over

XVII. Range conditions

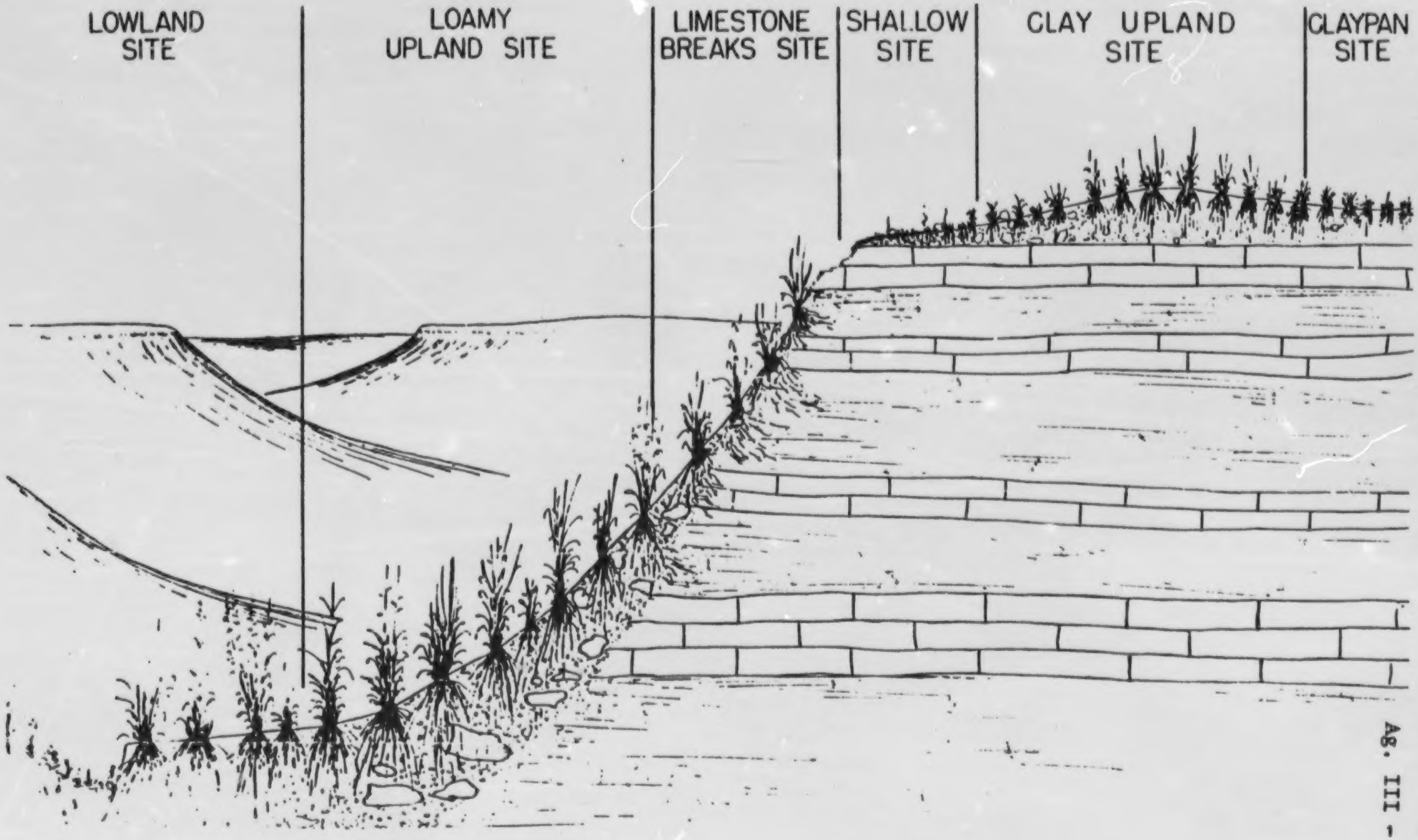
A. Excellent - A condition whereby 76-100 percent of the original or climax vegetation is still growing on the site.

B. Good - A condition whereby 51-75 percent of the climax vegetation is still growing on the site. Few weeds are present.

C. Fair - A condition whereby 26-50 percent of the climax vegetation is still growing on the site. Weeds are becoming more prominent.

D. Poor - A condition whereby less than 25 percent of climax vegetation is still growing on the site. Weeds are becoming abundant.

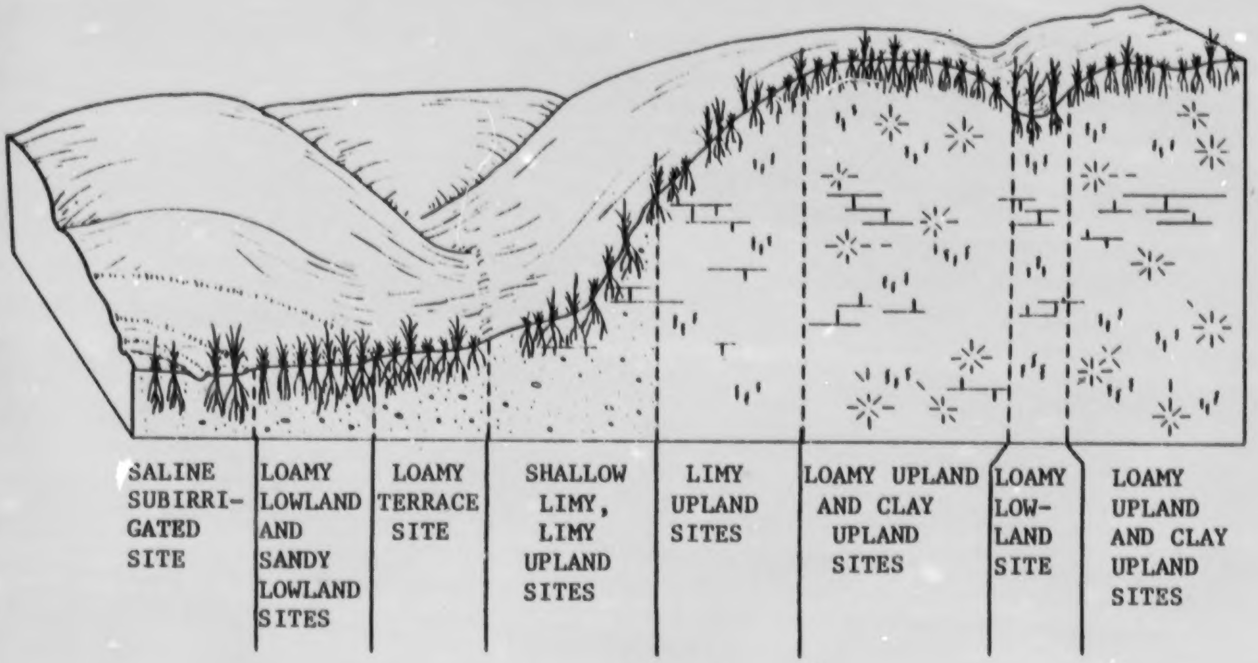
MAJOR FLINT HILLS RANGE SITES


LOWLAND SITE
LOAMY UPLAND SITE
LIMESTONE BREAKS SITE
SHALLOW SITE
CLAY UPLAND SITE
CLAYPAN SITE

TM 1

Ag. III - 85-A

MAJOR WESTERN KANSAS RANGE SITES
(EXCLUDING SANDS)


SALINE SUBIRRIGATED SITE
LOAMY LOWLAND AND SANDY LOWLAND SITES
LOAMY TERRACE SITE
SHALLOW LIMY, LIMY UPLAND SITES
LIMY UPLAND SITES
LOAMY UPLAND AND CLAY UPLAND SITES
LOAMY LOWLAND SITE
LOAMY UPLAND AND CLAY UPLAND SITES

IMPROVING NATIVE RANGELAND
UNIT III

ASSIGNMENT SHEET #1 - COLLECT AND IDENTIFY RANGELAND PLANTS

Collect as many rangeland plants as possible and identify each plant according to either perennial or annual; cool or warm; decreaser, increaser, or invader; good, fair, or poor in relationship to grazing value. When finished turn in to your instructor for his evaluation.

Place an "X" in the blank indicating the proper identification for the particular plant.

	(1)	(2)	(3)	(4)	(5)	(6)	(7) Climax	(8)	(9)	(10) Grazing Value	(11)	(12)
	Perennial	Annual	Cool Season	Warm Season	Native	Introduced	Decreaser	Increaser	Invader	Good	Fair	Poor

IMPROVING NATIVE RANGELAND
UNIT III

ASSIGNMENT SHEET #2 - SURVEY NATIVE RANGELAND

Survey a native rangeland and determine the kind of site, degree of utilization, and indicate range condition. After performing each procedure, recommend the control practices for improving the productivity of the range. When completed turn in to your instructor for his evaluation.

Place an "X" in each blank indicating your findings and recommendations.

RANGE UTILIZATION, SITE, CONDITION CLASS, AND RECOMMENDED PRACTICES

Grade		Degree of Utilization
☐	☐	Unused
☐	☐	Light
☐	☐	Moderate

Grade		
☐	☐	Close
☐	☐	Severe
☐	☐	Destructive

Grade		Kind of Range Site
☐	☐	Clay Lowland
☐	☐	Clay Upland
☐	☐	Limy Upland
☐	☐	Loamy Lowland
☐	☐	Loamy Upland
☐	☐	Sandy
☐	☐	Shallow Limy
☐	☐	Savannah
☐	☐	Sub irrigated

Range Condition Class

Grade		
☐	☐	Excellent
☐	☐	Good
☐	☐	Fair
☐	☐	Poor

Name the Predominant

1. Decreaser____________

2. Increaser____________

3. Invader____________

Recommended Management Practices

Grade	Check No.	
☐	1.	Defer grazing during the growing season.
☐	2.	Use moderate grazing during dormant season.
☐	3.	Delay grazing in the spring when plants first emerge.
☐	4.	Decrease rate of stocking.
☐	5.	Apply flexible stocking in order to limit use to 50% of the year's growth.
☐	6.	Use more livestock for a longer grazing season.
☐	7.	Seed with adapted native grasses and defer grazing until stand is well established.
☐	8.	Intensively graze invading grasses and forbs for a short period during their growing season for control.
☐	9.	Protect from uncontrolled burning.
☐	10.	Practiced weed control.
☐	11.	Apply brush or cactus control.
☐	12.	Practice light stocking following spraying of weeds and brush.

IMPROVING NATIVE RANGELAND
UNIT III

TEST

1. Match the term on the right to the correct definition.

_____a. Plant that decreases on a range when exposed to heavy grazing pressures

_____b. An area of land having a combination of climatic, topographic, and natural biotic factors which supports a specific combination of plants and forage production level

_____c. One which grows during the summer and early fall

_____d. The ecological state of health of rangeland

_____e. One which grows during the fall, winter, or spring

_____f. The worth of a plant for livestock production

_____g. Land which supports plants suitable for use as forage by domestic livestock or wildlife

_____h. A plant which comes into a range after both increasers and decreasers have been reduced, usually less desirable grasses, forbs, and woody species

_____i. One originating in North America

_____j. A plant that increases on a range when decreasers are reduced

_____k. One brough in from countries outside the United States

1. Site
2. Decreaser
3. Warm-season plant
4. Range condition
5. Cool-season plant
6. Grazing value
7. Range
8. Invader
9. Increaser
10. Native plant
11. Introduced plant

2. Name five factors that affect forage growth.

a.

b.

c.

d.

e.

3. Name six practices to follow in order to improve grazing distribution.
   a.
   b.
   c.
   d.
   e.
   f.

4. Name five principles of range management.
   a.
   b.
   c.
   d.
   e.

5. List two advantages and two disadvantages of range burning.
   Advantages:
   1.
   2.

   Disadvantages
   1.
   2.

6. List two advantages and two disadvantages of nitrogen range fertilization.
   Advantages:
   1.
   2.

   Disadvantages
   1.
   2.

7. Discuss what is meant by animal unit.

8. Distinguish between warm and cool season grasses. Place a W in the blank if the plant is a warm-season grass or a C in the blank if the plant is a cool-season grass.

   _____a. Big bluestem

   _____b. Little bluestem

   _____c. Switchgrass

   _____d. Buffalograss

   _____e. Indiangrass

9. Name the big five grasses that make up the tall grass prairie.

   a.

   b.

   c.

   d.

   e.

10. Name the three major plant problems of overgrazing.

    a.

    b.

    c.

11. List four major animal problems that arise form overgrazing.

    a.

    b.

    c.

    d.

12. Discuss in a short paragraph what effect the percent of plant removed has on the next year's growth.

13. Name three ways to prevent overgrazing

a.

b.

c.

14. Match the terms indicating the different systems of grazing on the right to the correct definition.

_____a. A practice of reserving part of the range for later use.

_____b. A practice of rotating grazing to accomplish range management objectives.

_____c. A practice of leaving cattle on the range for a twelve-month period.

1. Year-long
2. Deferred
3. Rotational

15. Match the terms indicating kinds of range sites on the right to the correct definition.

_____a. Steep, rough, shallow land; very low production.

_____b. Deep loamy soils having a good water-plant relationship for forage production; sites are nearly level to rolling rolling uplands.

_____c. Located along creeks and rivers; subject to overflow; very productive and capable of producing large amounts of forage plants.

_____d. Soils are red in color with rolling and broken topography, with some gentle slopes which support such grasses as buffalograss, blue grama. hairy grama, big bluestem, indiangrass, little bluestem, and switchgrass.

_____e. Soil is loamy or sandy textured with good, deep, sub-soils; highly productive; main grasses such as little or big bluestem, indiangrass, switchgrass, sideoat grama, blue grama, and buffalograss

_____f. Soil less than 10 inches deep and very rocky and rough; production very low and will not stand heavy grazing

1. Lowland
2. Breaks
3. Loamy Upland
4. Loamy or sandy prairie
5. Red clay prairie
6. Shallow limey
7. Rocky savannah
8. Sands
9. Clay Upland

_____g. Vegetation area between forest and prairie grassland with some scattered trees and native grasses

_____h. Soils that are medium or fine textured top soils with moderate or deep subsoils; sites are nearly level to gently sloping upland

_____i. Soils with coarse texture that take water readily with woody shrubs and tall grasses

16. Match terms on the right to the correct definition indicating degree of utilization.

_____a. Only a part of the tops of the plants grazed and less than 25 percent of the forage removed

_____b. Death loss of primary species, only remnants of good growth removed, plants surviving, low-order weeds have taken over

_____c. Good range plants grazed closely and more than one-half of year's growth removed

_____d. No livestock use

_____e. Good range plants grazed from 1 to 2 inches in height and more than 75 percent of main forage

1. Unused
2. Light
3. Close
4. Severe
5. Destructive

17. Match terms on the right to the correct definition indicating range condition.

_____a. A condition whereby 51-75 percent of the climax vegetation is still growing on the site; few weeds

_____b. A condition whereby less than 25 percent of climax vegetation is still growing on the site; weeds are becoming abundant.

_____c. A condition whereby 76-100 percent of the original or climax vegetation is still growing on the site

_____e. A condition whereby 26-50 percent of the climax vegetation is still growing on the site. Weeds are becoming more prominent.

1. Poor
2. Excellent
3. Good
4. Fair

18. Demonstrate the ability to:

a. Collect and identify rangeland plants.

b. Survey native rangeland

IMPROVING NATIVE RANGELAND
UNIT III

ANSWERS TO TEST

1. 2 a.
   1 b.
   3 c.
   4 d.
   5 e.
   6 f.
   7 g.
   8 h.
   10 i.
   9 j.
   11 k.

2. Any five of the follwing:
   a. Precipatation
   b. Soil nutrients
   c. Topography
   d. Texture of soil
   e. Structure of soil
   f. Light
   g. Temperature

3. a. Salt licks and oilers located away from desirable areas
   b. Winter feeding in less desirable areas
   c. When appropriate,;controlled burning and fertilizing
   d. Adequate and well-placed water supplies
   e. Rotation grazing
   f. Fencing

4. Any five of the following:
   a. Manage according to growth habits and palatability of livestock
   b. Select proper grass for management goals
   c. Use periodic rest to maintain or improve pastures.
   d. Protect against overgrazing of palatable grasses
   e. Protect against overgrazing just prior to and at seeding time
   f. Protect against overgrazing; do not damage root supply
   g. Stock according to forage production
   h. Moderately graze; take 50 percent and leave 50 percent
   i. Protect against uncontrolled burning
   j. Prescribed burning
   k. Practice brush control
   l. Nitrogen range fertilization

5. Advantages: (any two of the following)
   1. Increases livestock performance
   2. Controls undesirable weed and brush species
   3. Provides grazing distribution
   4. Improves forage quality

   Disadvantages: (any two of the following)
   1. Increases soil erosion
   2. Increases air pollution
   3. Reduces soil moisture
   4. Destroys natural habitat of small animals

6. Advantages:(any two of the following)
   1. Makes a more efficient use of available water
   2. May cause greater root exploration
   3. High N. content in the forage
   4. Increases dry matter yields
   5. May cause greater beef gains per acre.
   6. Elongates the period of active plant growth
   7. Improves carrying capacity

   Disadvantages: (any two of the following)
   1. Allows for increase competition from weeds
   2. allows for increase competition from cool season grasses
   3. Fertilizer hard to acquire and very expensive

7. Animal unit - Equal to a 1000 pound cow; a cow will consume approximately 750 pounds of dry matter per month.

8. __W__ a.

   __W__ b.

   __W__ c.

   __W__ d.

   __W__ e.

   __W__ f.

9. a. Big bluestem

   b. Little bluestem

   c. Indiangrass

   d. Switchgrass

   e. Sideoats grama

10. a. Reduces forage quality and production
    b. Lack of food available for new growth following year
    c. Packs ground and reduces water intake

11. Any four answers from the following list:
    1. Reduces birth weight
    2. Reduces rate of gain
    3. Reduces weaning weight
    4. Reduces milk production
    5. Reduces fertility - conception rates
    6. Reduces calf-lamb crop percent
    7. Reduces body weight

12. Discussion should contain the following statements:
    a. Seventy-five percent of plant is needed to grow ten percent of the root system
    b. Take fifty percent and leave fifty percent
    c. Under heavy grazing, plants lose vigor

13. a. Adjustment of stocking rate
    b. Grazing distribution
    c. Use of rest

14. __2__ a.
__3__ b.
__1__ c.

15. __2__ a.
__3__ b.
__1__ c.
__5__ d.
__4__ e.
__6__ f.
__7__ g.
__9__ h.
__8__ i.

16. __2__ a.
__5__ b.
__3__ c.
__1__ d.
__4__ e.

17. __3__ a.
__1__ b.
__2__ c.
__4__ d.

18. Performance skills will be evaluated by the instructor.

AGRICULTURAL CHEMICALS

TERMINAL OBJECTIVES

After completion of this unit, the student should be able to interpret the use of agricultural chemicals. The student should be able to list safety precautions and relate them to his or her home and community. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Define ten terms associated with agricultural chemicals.
2. List three sources of information regarding the safe handling of agricultural chemicals.
3. Name five items that all chemical labels must state.
4. Explain, in writing, the responsibility of Kansas State University in regard to agricultural chemicals.
5. Name three benefits from using chemicals.
6. Name three disadvantages of using chemicals.
7. Name five major areas of pests.
8. Name economic losses which may occur due to pests.
9. Distinguish between a repellent, stomach poison, and contact insecticide poison.
10. Name three ways chemicals enter the body.
11. List the protective clothing and accessories necessary for the protection of anyone handling chemicals.
12. Discuss three safety precautions before attempting to use chemicals.
13. Name three safety precautions when applying chemicals.
14. Name three safety precautions after using chemicals.
15. Name two methods of disposing of empty chemical containers.
16. List three safety precautions to use in storing chemicals.
17. List and discuss four regulatory procedures involved to apply and/or supply agricultural chemicals.
18. Demonstrate the ability to list the symptoms and first aid practices for acute pesticide poisoning.

AGRICULTURAL CHEMICALS

SUGGESTED ACTIVITIES

I. Instructor

- A. Provide students with objective sheet.
- B. Provide each student with information sheets.
- C. Make transparencies.
- D. Acquire Agricultural Chemicals Safety Instructor book and student book from Vocational Education Publications, California State Polytechnic College, San Luis Obispo, CA 93401
- E. Discuss terminal and specific objectives with students.
- F. Discuss information.
- G. Field trip to chemical sprayer.
- H. Give test.

II. Student

- A. Read objectives.
- B. Study information sheets.
- C. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

- A. Objectives
- B. Information sheet
- C. Supplemental information sheets #1, #2, and #3
- D. Transparency masters

TM 1 - Agricultural Chemicals
TM 2 - Oral LD_{50} Values
TM 3 - Sample Chemical Label
TM 4 - Key Words on Labels
TM 5 - Safety Precaution Before Chemical Use
TM 6 - Proper Spray Clothing
TM 7 - Disposal of Empty Containers
TM 8 - Certification Card For Commercial Applicators
TM 9 - Categories of Commercial Applicators

E. Assignment Sheet #1 - Emergency First Aid

F. Test

G. Answers to test

II. References:

A. "Handling and Using Agricultural Chemicals Safely", Vocational Agriculture Service, University of Illinois, Urbana Illinois.

B. Pesticide Safety Depends on You, XC-512, Cooperative Extension Service, Kansas State University, Manhattan, Kansas 66506.

C. Agriculture Chemicals Safety, Instructors and students books, Vocational Education Publications, California State Polytechnic College, San Luis Obispo, CA 93401.

D. "Be Safe When You Use Insecticides, Grain Fungicides, Rodenticides, Feed Additives, Seed Treatments," XMF-221, Extension Service, Kansas State University, Manhattan, Kansas 66506.

E. "Chemical Task Force Reports," Free Monthly Publications, Cooperative Extension Services, Kansas State University, Manhattan, Kansas 66506.

F. Kansas Pesticide Law and Regulations, Kansas State Board of Agriculture, Topeka, Kansas 66612, 1978.

G. Farrington, William S., Paul R. Vaughn, Clyde F. Sartor, and Ronald A. Brown. Fertilizer, Chemicals, and Seed., McGraw Hill, Inc., c. 1978.

AGRICULTURAL CHEMICALS

INFORMATION SHEET

I. Terms and definitions (Transparency 1)

A. Pesticides - A substance or mixture used for destroying or repelling such pests as insects, rodents, nematodes, weeds, and brush

B. Nematode - A small roundworm which lives in the soil and frequently enters the plants through the roots

C. Herbicide - A chemical substance used to kill herbaceous plants

D. Insecticide - A chemical substance used to kill or repel insects such as flies and grasshoppers

E. Rodenticide - A chemical substance used to control rats, mice, and other rodents

F. Defoliant - Any substance or mixture of substances used to cause leaves or foliage to drop from plants, generally to facilitate harvesting

G. Fungicide - A chemical substance used to control fungi

H. Antibiotics - Any chemical or chemicals produced by living organisms that help alleviate or control bacterial diseases

I. Plant regulators - Any substance or mixture of substances that effect, through physiological action, growth rate or other behavior of plants

J. Poison - A substance which, if introduced into an organism in relatively small amounts, may chemically produce an injurious or deadly effect

K. Toxicity - The degree a given substance injures plants or animals

(NOTE: Toxicity is classified as acute (immediate) or chronic (long term).)

L. LD_{50} - The average lethal dosage of the poisonous substance required to kill 50% of a large population of laboratory animals. (TM 2)

(NOTE: The lower the LD_{50}, the more toxic the chemical.)

M. Acute exposure - Refers to inhaling or absorbing of large amounts of chemicals in a short period of time

N. Chronic exposure - Refers to inhaling or absorbing relatively small amounts of poison over a long duration (days, months, or years)

O. Absorption - The process whereby the material gains entry into the bloodstream.

P. Hazard - The danger or probability that injury will result from the use of a substance in a given quantity and manner

Q. Nematocide - A chemical substance used to control nematodes

R. Safety - The practical certainty that injury will not result from the use of a given substance

II. Sources of information

A. Chemical labels (Transparency 3)

B. Technical publications from chemical firms

C. State and federal laws and regulations

III. Key items on chemical labels (Transparency 4)

A. Personal precautions or signal words

1. Poison, skull, and crossbones (hazardous substances)

2. Danger (highly toxic products)

3. Caution or warning (products that can cause illness or injury)

B. Name and address of manufacturer

C. Statement of net contents

D. Ingredients and their effect

E. Directions for use

F. Precautionary statements for using

G. Date of expiration

H. Antidote

I. Storage precautions

J. Disposal of chemical containers

(NOTE: See supplemental information sheet #1.)

IV. University responsibilities with chemicals

A. Research

B. Development

C. Dissemination of inforamtion

V. Benefits of chemicals

A. Increase production

1. Labor savings

2. Increases profits

B. Reduce pest loss

C. Control undesirable vegetation
   1. Grass
   2. Broadleaf plants
   3. Brush
D. Defoliant

VI. Disadvantages of using chemicals
   A. Pests may become more established following chemical use due to the loss of predators and parasites
   B. Non-target organisms may be adversely affected
   C. Human poisoning may occur

VII. Major area of pests
   A. Weeds
   B. Insects
   C. Disease
      1. Bacteria
      2. Viruses
      3. Fungi
   D. Rodents
   E. Nematodes

VIII. Economic losses which may occur due to pests
   A. Reduced vigor of plants and animals
   B. Decreased yields from crops
   C. Decreased production from livestock
   D. Lowered quality of crop and livestock products
   E. Losses occurring in storage
   F. Reduced profits and increased productions costs
   G. Damage to buildings and equipment
   H. Reduced land values

IX. Types of insecticieds
   A. Repellent - Chemicals that do not kill most insects although they may injure certain types
   B. Stomach poison - Chemicals that must enter the digestive tract of the insect before they are effective
   C. Contact poison - Chemicals that can enter the insect by means other than the digestive tract

X. Methods chemicals enter the body
   - A. Absorption through the skin
   - B. Swallowing
   - C. Absorption by breathing
   - D. Absorption through eyes

XI. Types of protective clothing and accessories (Transparency 6)
   - A. Rubber golves
   - B. Rubber boots
   - C. Safety goggles
   - D. Breathing apparatus (respirator)
   - E. Head protection (cap)
   - F. Proper clothing
      1. Rubber apron
      2. Slicker suit

XII. Safety precautions before using chemicals (Transparency 5)
   - A. Read labels before using
   - B. Use only when necessary
   - C. Use according to recommendations
   - D. Use recommended preparation and mixing procedures
   - E. Avoid sprays and dust drift
   - F. Keep away from livestock
   - G. Cover feed and water containers when using
   - H. Wear appropriate protective clothing
   - I. Avoid residue build-up

(NOTE: All laws and regulations regarding the application and use of chemicals should be studied before use. The responsibilities involved by those recommending and selling chemicals should be understood.

XIII. Safety precautions when applying chemicals
   - A. Wear appropriate protective clothing and accessories
   - B. Minimize drift by adjusting sprayer equipment
   - C. Avoid residue build-up

XIV. Safety rules after using chemicals
  - A. Properly dispose of unwanted chemicals
  - B. Properly dispose of unwanted chemical containers
  - C. Clean the spraying equipment and area
  - D. Remove protective clothing and clean up

XV. Disposal of empty containers (Transparency 7)
  - A. Burning

    (NOTE: Burn immediately upon completion of job. Do not inhale smoke from fire.)
  - B. Burying

XVI. Safety precautions for storage
  - A. Store in original containers
  - B. Store away from children
  - C. Store away from feed
  - D. Store in a cool, dry area
  - E. Store in locked cabinet
  - F. Check stored chemicals periodically

XVII. Regulatory procedures to apply and/or supply agricultural chemicals
  - A. Obtain official approval to apply and/or supply agricultural chemicals
    - 1. Applicator's certification
      - a. Required to apply restricted agriclutural chemicals
      - b. Educational training required before certification
      - c. Examination administered by the State Board of Agriculture
      - d. Certificate and certification card given if satisfactory examination score is obtained (TM 1)

        (NOTE: Certification card must be presented to dealer when purchasing restricted agriclutural chemicals.)
      - e. Private (farmer) and commercial certification issued (TM 2)
    - 2. Operator's license
      - a. Required to supply agricultural chemicals
      - b. Issued by the State Board of Agriculture to dealers
  - B. Recognize the responsibilities involved by those recommending and supplying chemicals

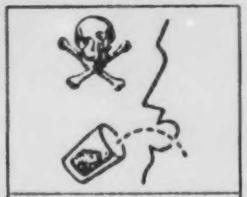
1. Insure chemical labels are intact and legible
2. Check for proper certification of customers for chemical being sold
3. Explain application and storage procedures for chemical being sold

C. Complete and file applicator's records (See Supplemental Information Sheet #2)

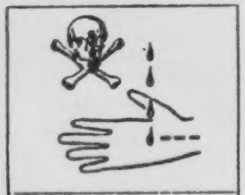
D. Complete and file operator's records (See Supplemental Information Sheet #3)

SUPLEMENTAL INFORMATION SHEET #1

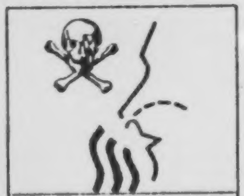
DANGER — POISON — PRECAUTIONS


DO NOT SWALLOW

POISONOUS IF SWALLOWED — This product can kill you if swallowed even in small amounts: spray mist or dust may be fatal if swallowed.


DO NOT TOUCH

POISONOUS BY SKIN CONTACT— Poisonous if touched by hands or spilled or splashed on skin, in eyes or on clothing (liquid goes through clothes).


DO NOT BREATHE

POISONOUS IF BREATHED— Breathing vapors, spray mist or dust may be fatal.

DANGER

Poisonous if swallowed, inhaled or absorbed through the skin! Rapidly absorbed through the skin or eyes. Do not get in eyes, on skin or on clothing. Do not breathe the spray mist or vapor.

Repeated inhalation or skin contact may, without symptoms, progressively increase susceptibility to methyl parathion poisoning.

Clothing wet with this material must be removed immediately.

Exposed persons must receive prompt medical attention or they may die.

Do not contaminate feed and foodstuffs.

KEEP AWAY FROM HEAT AND OPEN FLAME.

POISONOUS TO FISH AND WILDLIFE

This product is toxic to fish and wildlife. Birds feeding on treated areas may be killed. Keep out of any body of water. Do not apply when weather conditions favor drift from areas treated. Do not apply where runoff is likely to occur. Do not contaminate water by cleaning of equipment or disposal of wastes. APPLY THIS PRODUCT ONLY AS SPECIFIED ON THIS LABEL.

USE ONLY WHEN WEARING THE FOLLOWING PROTECTIVE EQUIPMENT AND CLOTHING

Wear clean natural rubber gloves, waterproof pants, coat, hat, rubber boots or rubber overshoes and safety goggles when handling, mixing or applying this product. Wear a face mask or respirator of a type passed by the U.S. Bureau of Mines for endrin and methyl parathion.

WORK SAFETY RULES

Keep all unprotected persons and children away from treated area where there is danger of drift.

Do not rub eyes or mouth with hands. If you feel sick in any way STOP and get help right away. Call a doctor (physician), clinic or hospital—immediately. Explain that the victim has been exposed to methyl parathion and describe his condition. After first aid is given (see First Aid Treatment Section) and if a doctor cannot come, take victim to clinic or hospital.

IMPORTANT! Before removing gloves, wash them with soap and water. Always wash hands, face and arms with soap and water before smoking, eating or drinking.

AFTER WORK, take off all work clothes and shoes. Shower, using soap and water. Wear only clean clothes when leaving job. Do not wear contaminated clothing. Wash protective clothing and protective equipment with soap and water after each use. Respirator should be cleaned and filter replaced according to instructions included with respirator.

CONTAINER DISPOSAL

Do not reuse empty containers.

Decontaminate empty containers by rinsing with a solution prepared by mixing 5 gallons of water, 2 pounds of caustic soda (household lye) and 1 cup detergent. Close container openings and rotate container repeatedly until all inner surfaces are thoroughly wet. Bury rinse solution at least 18 inches deep in isolated areas of noncropland away from water surfaces. Crush or perforate container to prevent further use and dispose of by burying with wastes or by burning. (Keep out of smoke.)

NOTICE: Because Velsicol Chemical Corporation has no control over storage, handling, and conditions of use, which are of critical importance, Velsicol Chemical Corporation makes no representation or warranty, either express or implied, for results or residues greater than any tolerance which may be established by appropriate governmental agencies, due to misuse, improper handling or storage of this material. Nor does Velsicol Chemical Corporation assume any responsibility for injury to persons, crops, animals, soil or property arising out of misuse, improper handling or storage of this material.

SP-47

SPECIMEN LABEL

STOP — READ LABEL BEFORE USING!

POISON

See Side Panels for Antidote & Precautions

CAN CAUSE DEATH

DANGER

Keep Out of Reach of Children

VELSICOL®

ENDRIN-Methyl Parathion

EMULSIFIABLE CONCENTRATE

Contains 1.6 Pounds Endrin and 1.6 Pounds Methyl Parathion per Gallon

ACTIVE INGREDIENTS:	
Endrin*	18.3%
O,O-Dimethyl O-p-nitrophenyl thiophosphate**	18.3%
Petroleum Hydrocarbons	58.4%
INERT INGREDIENTS	5.0%
TOTAL	100.0%

*Hexachloroepoxyoctahydro-endo-endo-dimethanonaphthalene.

**Methyl Parathion.

E.P.A. Reg. No. 876-127-AA

NET CONTENTS:

NOT FOR HOME USE

VELSICOL CHEMICAL CORPORATION 341 East Ohio Street, Chicago Illinois 60611

KPL-150 SUPPLEMENTAL INFORMATION SHEET #2

KANSAS STATE BOARD OF AGRICULTURE

TOPEKA, KANSAS 66603

W. W. Duitsman
Secretary

503 Kansas Avenue
913-296-3556

SPECIAL RESTRICTED USE PERMIT

This form (when properly completed) is considered a special restricted use permit and allows the undersigned to purchase and use the restricted chemical for pest control on designated Kansas acreage.

1. PURCHASER (Landowner or Farm Operator) (Type or Print)
   Name ____________________
   Address ____________________
   City ____________ State ____________
   County ____________ Certification No. ________

* * * * * * * * * * *

2. SELLER (Type or Print)
   Business Name ____________________
   Business Address ____________________
   City ________ State ________ Zip ________

* * * * * * * * * * *

3. If applicator is other than the purchaser, name and certification number of certified applicator who will be applying the chemical under this permit.
   Name ____________________ Certification No. ________

* * * * * * * * * * *

4. County and ASCS Field(s) to be treated and additional information specifying the area within the field to be treated.

COUNTY IN WHICH TREATMENT IS TO BE MADE.	ASCS FIELD(s) #	NO. OF ACRES TO BE TREATED	NUMBER POUNDS APPLIED	NUMBER GALLONS APPLIED
	TOTALS	____ Acres	____ Pounds	____ Gallons

* * * * * * * * * * *

5. LANDOWNER If other than Farm Operator
   Name ____________________
   Address ____________________
   City ____________ State ____________
   County ____________ Zip ____________

* * * * * * * * * * *

6. I acknowledge that I have read and understand the restricted chemical labeling, that the chemical will be used in accordance with labeling directions and restrictions only on land specified above, and, if I am not the owner of any fields specified above, that the landowner will be notified of the labeling restrictions. It is further agreed that inspection officials of the Kansas State Board of Agriculture will be allowed access to treated acreage for inspection.

____________________ ____________________
SIGNATURE OF LANDOWNER OR FARM OPERATOR DATE OF PURCHASE

Disposition of Copies:
White and Canary Copies: Mail to Weed and Pesticide Division
Pink Copy: Seller
Goldenrod Copy: Landowner or Farm Operator

SUPPLEMENTAL INFORMATION SHEET #3

KANSAS STATE BOARD OF AGRICULTURE

TOPEKA, KANSAS 66612

ENTOMOLOGY DIVISION
H. DEAN GARWOOD, Director
1720 S. Topeka Avenue
(913) 296-3016

W. W. DUITSMAN
Secretary

CHEMICAL USE PERMIT

This form, when properly completed and distributed by the certified commercial pesticide applicator, authorizes said certified commercial applicator to procure and apply the chemical on behalf of the customer listed below in accordance with the specific exemption granted for the use of such pesticide to the Kansas State Board of Agriculture under provisions of Section 18 of the Federal, Insecticide, Fungicide and Rodenticide Act.

PLEASE PRINT

1. Property Owner/Farm Operator

Name: ______________________ Telephone: __________

Address: ______________________

* * * * * * * * * * *

2. Location of Treatment

Legal Description or Location: ______________________

County: ______________ No. of Acres to be Treated: __________

Is this the first ☐ or second ☐ treatment at this location? (check one)

* * * * * * * * * * *

3. Pesticide - Amount Purchased with this Application: __________

Type (check one)	Supplier (check one)
Ambush 2E ☐	Farmland Industries ☐
Pounce 3.2 EC ☐	Cornbelt Chemical ☐
	Pueblo Chemical ☐

* * * * * * * * * * *

4. Applicator(s)

Name(s): ______________ Certification No.: __________

______________ Certification No.: __________

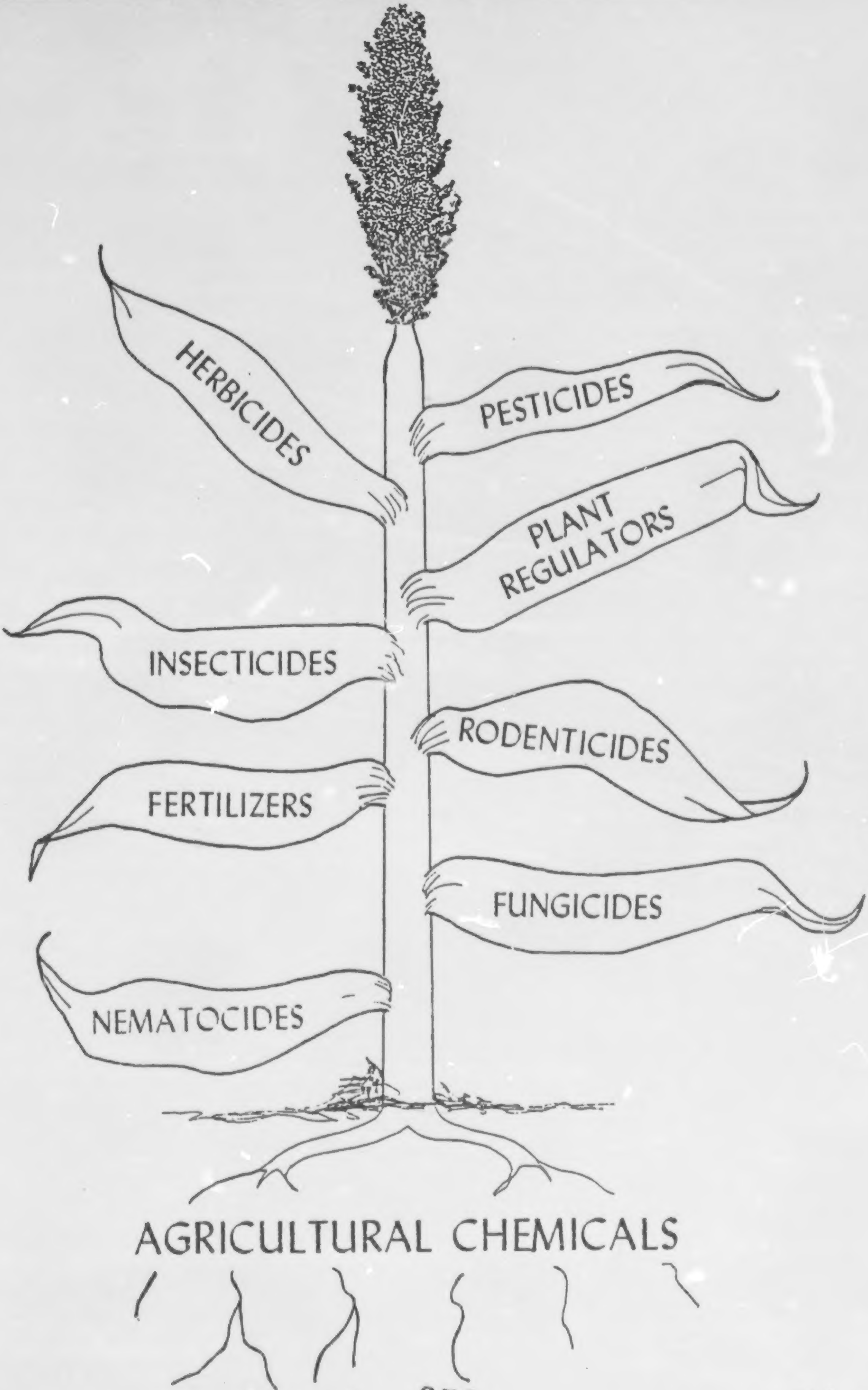
Business Address: ______________________

I affirm that the grower (farmer) has been notified of the 30 day pre-harvest restriction and the 60 day crop rotation restriction of the chemical label. I agree to notify the Kansas State Board of Agriculture of any accident involving the handling or application of this chemical.

______________________ ______________
Signature of Applicator Date

This form must be distributed within seven days of the above date to:

White - Entomology Div., KS State Board of Agriculture, 1720 S. Topeka Ave., Topeka, KS 66612
Canary - Property Owner/Farm Operator
Pink - Applicator's File


HERBICIDES
PESTICIDES
PLANT REGULATORS
INSECTICIDES
RODENTICIDES
FERTILIZERS
FUNGICIDES
NEMATOCIDES

AGRICULTURAL CHEMICALS

ORAL LD_{50} VALUES

DEGREE OF TOXICITY	ACUTE ORAL LD_{50} FOR ANY ANIMAL (MG/KG.)	PROBABLE LETHAL ORAL DOSE OF TECHNICAL (UNDILUTED) MATERIAL FOR HUMAN ADULT
EXTREMELY TOXIC	LESS THAN 5	A FEW DROPS
EXTREMELY TOXIC	5 TO 50	"A PINCH" TO 1 TEASPOON
VERY TOXIC	50 TO 500	1 TEASPOONFUL TO 2 TABLESPOONFULS
MODERATELY TOXIC	500 TO 5,000	1 OUNCE TO 1 PINT (1 POUND)
SLIGHTLY TOXIC	5,000 TO 15,000	1 PINT TO 1 QUART (2POUNDS)

CLINICAL HANDBOOK FOR ECONOMIC POISONS, U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE.

SAMPLE CHEMICAL LABEL

RESTRICTED USE PESTICIDE

FOR RETAIL SALE TO AND APPLICATION ONLY BY CERTIFIED APPLICATORS OR PERSONS UNDER THEIR DIRECT SUPERVISION AND ONLY FOR THOSE USES COVERED BY THE CERTIFIED APPLICATOR'S CERTIFICATION.

FOR RETAIL SALE AND USE ONLY IN STATES WITH A RESTRICTED USE PERMIT PROGRAM APPROVED BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY.

VELSICOL®

HEPTACHLOR 20G

GRANULAR INSECTICIDE

SPECIMEN LABEL

KEEP OUT OF THE REACH OF CHILDREN

WARNING

See below for additional precautions

E.P.A. Reg. No. 876-265-AA
E.P.A. Est. No. 1029—IA—1

NET CONTENTS: 50 POUNDS 15-30 MESH

ONLY FOR CONTROL OF CUTWORMS ON FIELD CORN

ACTIVE INGREDIENTS:	
Heptachlor*	20.00%
Related Compounds	7.00%
INERT INGREDIENTS	73.00%
TOTAL	100.00%

*Heptachlorotetrahydro-4, 7-methanoindene

STATEMENT OF PRACTICAL TREATMENT

INTERNAL—Emetic of 1 tablespoonful mustard in tumbler of water. Call a physician.

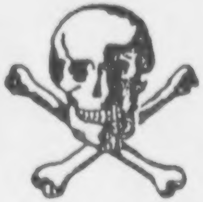
EXTERNAL—In case of spillage on skin, wash promptly with soap and water.

VELSICOL CHEMICAL CORPORATION
341 East Ohio Street, Chicago, Illinois 60611

KEY WORDS ON LABELS

Warning:
Keep out of reach of children.
See additional warning statements left of container seam.

CAUTION
KEEP OUT OF REACH OF CHILDREN
See Side Panel for Additional Cautions



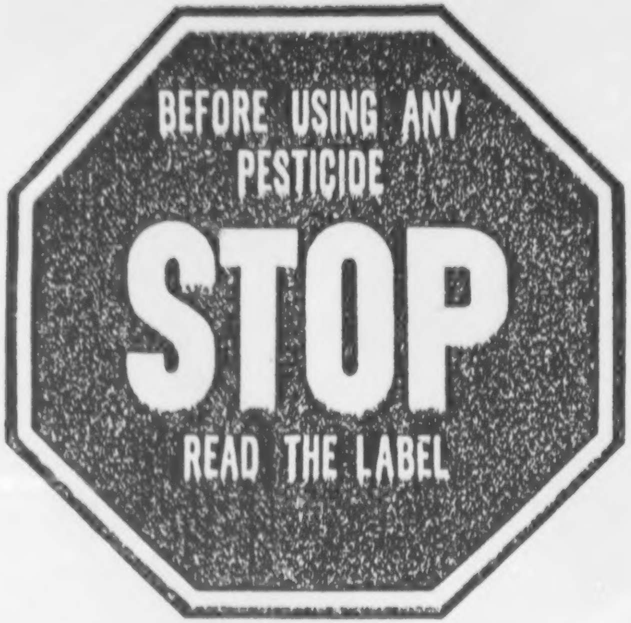
CAN KILL YOU

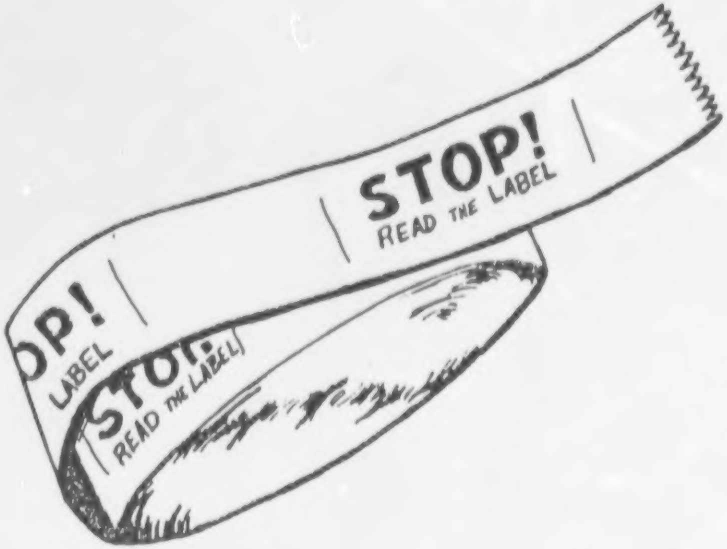
POISON
See side panels
for antidote
and precautions

DANGER
Keep out of reach
of children

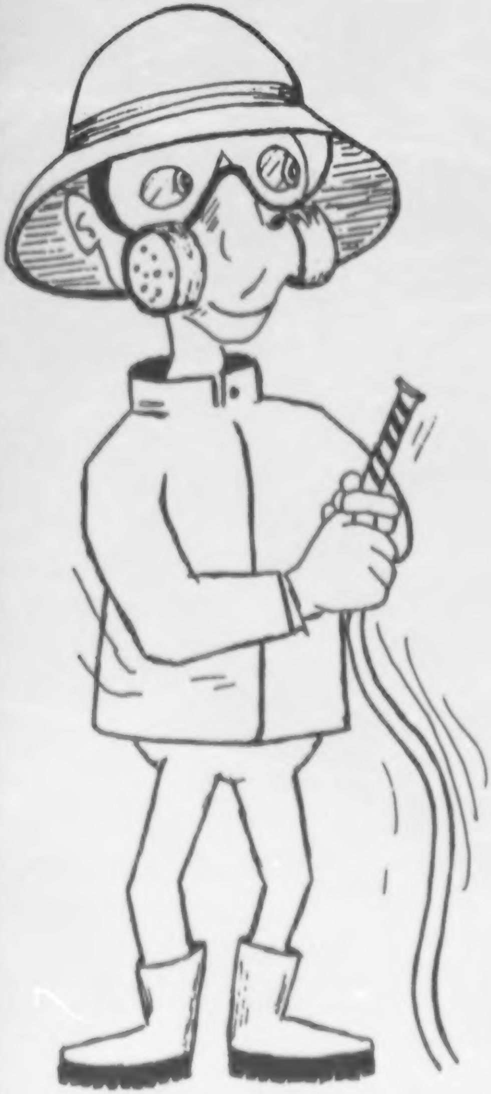
TM 4

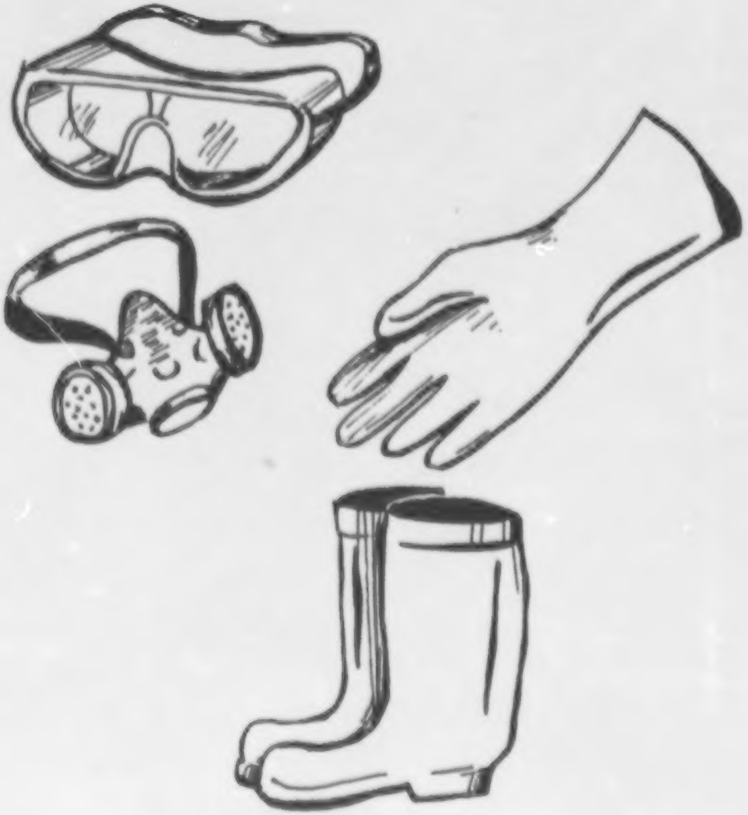
SAFETY PRECAUTION BEFORE CHEMICAL USE


BEFORE USING ANY PESTICIDE
STOP
READ THE LABEL


STOP!
READ THE LABEL
OP!
LABEL
STOP!
READ THE LABEL

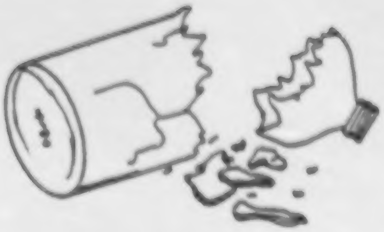
Proper Spray Clothing



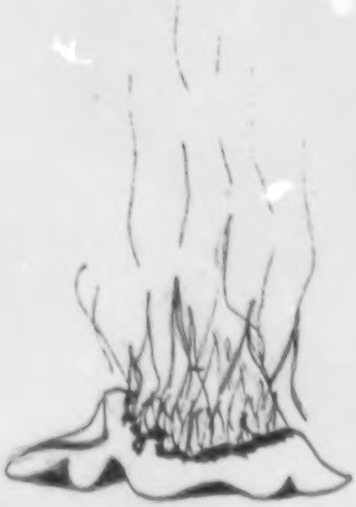


DISPOSAL OF EMPTY CONTAINERS

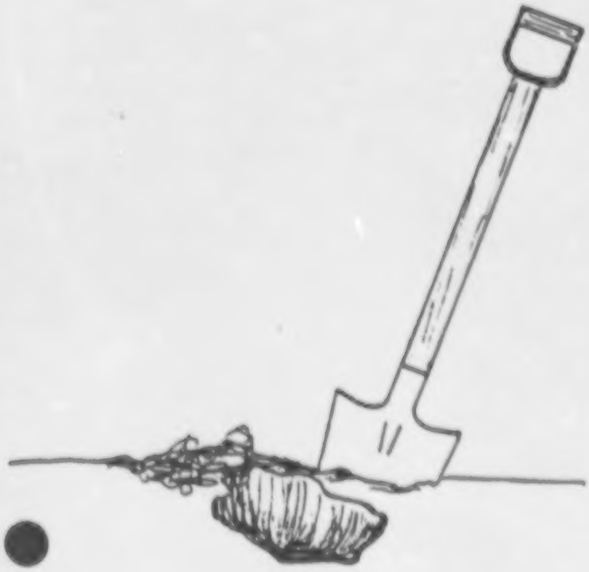
BREAK & BURY



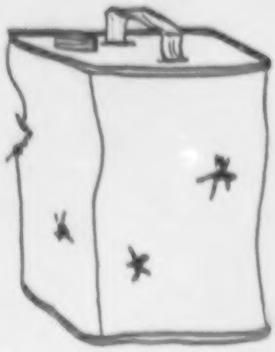
BURN



BURY



PUNCTURE & BURY



CERTIFICATION CARD FOR COMMERCIAL APPLICATOR

STATE OF KANSAS
2625 KANSAS STATE BOARD OF AGRICULTURE

EFFECTIVE: JUNE 30, 1979 EXPIRES: DEC. 31, 1981

JOE L. DOE

HAS MET THE REQUIREMENTS FOR COMMERCIAL APPLICATOR CERTIFICATION UNDER THE KANSAS PESTICIDE LAW AND IS HEREBY AUTHORIZED TO APPLY, AND SUPERVISE THE APPLICATION OF, RESTRICTED USE PESTICIDES IN THE CATEGORIES AND SUBCATEGORIES INDICATED ON THE BACK OF THIS CARD.

- FRONT

CATEGORIES AND SUBCATEGORIES IN WHICH CERTIFIED:

CAT. 4 - SEED TREATMENT

W. W. DUITSMAN,
SECRETARY

- BACK

CATEGORIES OF COMMERCIAL APPLICATORS

CATEGORY NUMBER	CATEGORY
1A	Agriculture - Plant Pest Control
1B	Agriculture - Animal Pest Control
1C	Agriculture Vertebrate Pest Control
2	Forest Pest Control
3A	Ornamental Pest Control
3B	Turf Pest Control
4	Seed Treatment
5	Aquatic Pest Control
6	Right-of-Way Pest Control
7A	Wood Destroying Pest Control
7B	Stored Products Pest Control
7C	Industrial Weed Control
7D	Health Related Pest Control
7E	Structural Pest Control
8	Public Health Pest Control
10	Demonstration & Research Pest Control

AGRICULTURAL CHEMICAL

ASSIGNMENT SHEET #1--EMERGENCY FIRST AID

Review the information on acute pesticide poisoning and list the symptoms and first aid practices.

PESTICIDE	SYMPTOMS	FIRST AID
Organic Phosphates Parathion TEPP Di-syston Thimet Malathion Diazinon	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18.	1. 2. 3. 4. 5. 6. 7. 8. 9.
Chlorinated Hydracarbons Aldrin Diedrin Cholrodane Lindane	1. 2. 3. 4. 5. 6. 7. 8. 9. 10.	1. 2. 3. 4.
Carbonates Sevin		

AGRICULTURAL CHEMICALS

TEST

1. Define the following terms:
   a. Pesticide -

   b. Defoliant -

   c. Antibiotics -

   d. Poison -

   e. Toxicity -

   f. LD_{50} -

   g. Acute exposure -

   h. Hazard -

   i. Safety -

   j. Insecticide -

2. List three sources of information regarding the safe handling of agricultural chemicals.
   a.
   b.
   c.

3. Name five items that all chemical labels must state.
   - a.
   - b.
   - c.
   - d.
   - e.

4. What are the responsibilities of Kansas State University in regard to agricultural chemicals?

5. What are three benefits of agricultural chemicals?
   - a.
   - b.
   - c.

6. Name three disadvantages of using chemicals.
   - a.
   - b.
   - c.

7. Name five major areas of pests that cause damage to crops and livestock.
   - a.
   - b.
   - c.
   - d.
   - e.

8. Name six economic losses which may occur due to pests.
   - a.
   - b.
   - c.
   - d.
   - e.
   - f.

9. What is the difference between a repellent, a stomach poison, and a contact insecticide poison?

10. Name three ways chemicals enter the body.

    a.
    b.
    c.

11. What types of protective clothing and accessories should be worn when using agricultural chemicals.

    a.
    b.
    c.
    d.
    e.

12. Name three important rules to follow before attempting to use chemicals.

    a.
    b.
    c.

13. Name three safety precautions when applying chemicals.

    a.
    b.
    c.

14. Name three safety precautions after using chemicals.

    a.
    b.
    c.

15. How should empty containers be disposed of?

    a.
    b.

16. Name three safety precautions used in storing chemicals.

a.

b.

c.

17. List and discuss four regulatory procedures involved to apply and/or supply agricultural chemicals.

a.

b.

c.

d.

AGRICULTURAL CHEMICALS

ANSWERS TO TEST

1. a. Pesticide - A substance or mixture used for destroying or repelling such pests as insects, rodents, nematodes, weeds, and brush.
   b. Defoliant - Any substance or mixture of substances used to cause leaves or foliage to drop from plants, generally to facilitate harvesting.
   c. Antibiotics - Any chemical or chemicals produced by living organisms that help alleviate or control bacterial diseases.
   d. Poison - A substance which, if introduced into an organism in relatively small amounts, may chemically produce an injurious or deadly effect.
   e. Toxicity - The degree a given substance injures plants or animals.
   f. LD_{50} - The average lethal dosage of the poisonous substance required to kill 50% of a large population of laboratory animals.
   g. Acute exposure - Refers to inhaling or absorbing of large amounts of chemicals in a short period of time.
   h. Hazard - The danger or probability that injury will result from the use of a substance in a given quantity and manner.
   i. Safety - The practical certainty that injury will not result from the use of a given substance.
   j. Insecticide - A chemical substance used to kill or repel insects such as flies and grasshoppers.

2. a. Chemical labels
   b. Technical publications from chemical firms
   c. State and federal laws and regulations

3. Any five of the following:
   a. Poison - skull, crossbones
   b. Danger
   c. Caution or warning
   d. Name and address of manufacturer
   e. Statement of net content
   f. Ingredients
   g. Direction of use
   h. Precautionary statements

i. Date of expiration

j. Antidote

4. a. Research

   b. Development

   c. Dissemination of information

5. a. Increase production

   b. Reduce pest loss

   c. Control undesirable vegetation

6. a. Pest may become more established following chemical use due to loss of predators and parasites.

   b. Non-target organisms may be adversely affected.

   c. Human poisoning may occur.

7. a. Weeds

   b. Insects

   c. Disease

   d. Rodents

   e. Nematodes

8. Any six of the following:

   a. Reduced vigor of plants and animals

   b. Decreased yields from crops

   c. Decreased production from livestock

   d. Lowered quality of crop and livestock products

   e. Losses occuring in storage

   f. Reduced profits and increased productions costs

   g. Damage to buildings and equipment

   h. Reduced land values

9. A repellent serves as a preventative measure and a contact poison will cause death.

10. Any three of the following:
    a. Absorption through skin
    b. Swallowing
    c. Absorption by breathing
    d. Absorption through eyes

11. Any five of the following:
    a. Safety goggles
    b. Rubber gloves
    c. Rubber boots
    d. Long sleeved shirt
    e. Cap
    f. Respirators
    g. Rubber apron
    h. Slicker suit

12. Any three of the following:
    a. Read label before using
    b. Use only when necessary
    c. Use according to recommendations
    d. Avoid spray and dust drift
    e. Keep away from livestock
    f. Cover feed and water containers when using

13. a. Wear appropriate protective clothing and accessories
    b. Minimize drift by adjusting sprayer equipment
    c. Avoid residue build-up

14. Any three of the following:
    a. Properly dispose of unwanted chemicals
    b. Properly dispose of unwanted chemical containers
    c. Clean the spraying equipment and area
    d. Remove protective clothing and clean up

15. a. Burning
    b. Burying

16. Any three of the following:
    a. Store in original containers
    b. Store away from children
    c. Store away from feed
    d. Store in cool, dry area
    e. Store in locked cabinet

17. Discussion should include the following points:
    a. Obtain official approval to apply and/or supply agricultural chemicals
    b. Recognize the responsibilities involved by those recommending and supplying chemicals
    c. Complete and file applicator's records
    d. Complete and file operator's records

CHEMICAL WEED CONTROL

TERMINAL OBJECTIVES

After completion of this unit, the student should be able to recognize the nature and extent of weed problems. The student should be able to discuss means of controlling weeds and adapt these practices to his/her home farm and community. The student should demonstrate this by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Define five terms associated with chemical weed control.
2. List three ways weeds are propagated from area to area.
3. Detect agents that contribute to the spreading of weeds.
4. Recognize four factors with which weeds and crops compete.
5. List five ways that weeds can cause damage in a farming program.
6. Distinguish between the different methods of chemical treatments.
7. Discuss in writing three classifications of herbicides.
8. List the five herbicide formulations.
9. Name four factors that determine herbicide application rate.
10. Identify five herbicides and their respective crops on which they can be used.
11. Name three factors that determine when to apply herbicides.
12. Identify three styles of nozzles when given a drawing illustrating the styles.
13. List six safety precautions to follow when using herbicides.
14. Name two methods of properly disposing of empty herbicide containers.
15. Calculate a problem figuring the pounds of herbicide needed for an acre of land.
16. Calculate a problem figuring the amount of spray delivered per acre.
17. Collect and identify five weeds and discuss their means of reproducing.

CHEMICAL WEED CONTROL
UNIT VI

SUGGESTED ACTIVITIES

I. Instructor:
   - A. Provide students with objective sheet.
   - B. Provide students with information sheets.
   - C. Discuss terminal and specific objectives.
   - D. Discuss information and assignment sheets.
   - E. Take field trip.
   - F. Teach unit on chemical safety before teaching this unit.
   - G. Give test.
   - H. Display sample herbicide packages.
   - I. Discuss chart showing yield results of different application rates.

II. Students:
   - A. Read objective sheet.
   - B. Study information sheets.
   - C. Demonstrate the ability to accomplish the procedures outlined in the assignment sheets.
   - D. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:
   - A. Objective sheet
   - B. Information sheets
   - C. Transparency masters
     1. TM 1 - Herbicide Classifications
     2. TM 2 - Application of Herbicides
     3. TM 3 - Nozzle Types
   - D. Assignment sheets
     1. Assignment Sheet #1 - Collecting and Identifying Needs
     2. Assignment Sheet #2 - Calculating Application Rates of Herbicides
   - E. Test
   - F. Answers to test

II. References:

A. Weed Control, Cultural and Chemical, Department of Agricultural Education, Ohio State University, Columbus, Ohio.

B. Instructional Materials for Vocational Agriculture II, Teaching Materials Center, Agricultural Education Department, Texas A & M University, College Station, Texas.

C. Chemical Weed Control in Field Crops, Cooperative Extension Service, Kansas State University, Manhattan, KS #SRP-224.

D. Understanding Your Sprayer, Cooperative Extension Service, Kansas State University, Manhattan, KS #XE-415.

E. Sprayer Calibration Momograph, Cooperative Extension Service, Kansas State University, Manhattan, KS #XMF-415.

CHEMICAL WEED CONTROL
UNIT VI

INFORMATION SHEET

I. Terms and definitions

   A. Weed - A plant out of place

   B. Chemical - A material that has been developed to control weeds without harming crops

   C. Herbicide - A chemical developed to control herbaceous plants

   D. Label - A legal identification attached to containers of any commercially sold agricultural chemical giving a summary of its properties, uses, and precautions

   E. Foliar herbicide - A herbicide applied to the crucial parts of a plant

   F. Soil herbicide - A herbicide applied directly to the soil

   G. Selective herbicide - A herbicide which kills or damages a select strain of plants

   H. Non-selective herbicide - A herbicide used to remove all or most of the plants within the treated area

   I. Penetration - The movement of the herbicide retained on the surface

   J. Translocation - The movement of a herbicide from the point of penetration to the other parts of the plant

   K. Retention - The amount of herbicide that remains on the foliage after application

   L. Perennial - The plants that normally live for more than two years

   M. Hazardous chemicals - The chemicals that are hazardous to man, animals, and plants

II. Ways by which weeds are propagated

   A. Seeds

   B. Roots

   C. Stems

III. Agents that spread weeds

   A. Wind

   B. Water

   C. Animals

   D. Man

   E. Equipment

IV. Factors for which weeds and crops compete
    A. Soil nutrients
    B. Moisture
    C. Light
    D. Carbon dioxide

V. Harmful effects of weeds
    A. Reduce crop yields
    B. Reduce quality of crop
    C. Increase production costs
    D. Increase labor and equipment costs
    E. Harbor diseases and insects
    F. Damage livestock and people

VI. Methods of application of chemical treatments (Transparency 1)
    A. Broadcast - Covers the entire area or field at a uniform rate
    B. Row or band - Places chemicals directly over the rows
    C. Spot - Places chemicals in limited areas infested with weeds
    D. Directed sprays - Places spray directly on a certain part of the plant

VII. A. Preplant - Applying herbicides before the crop is planted
    B. Preemergence - Applying chemicals before the crop or weeds emerge
    C. Postemergence - Applying chemicals after the crops or weeds emerge

VIII. Herbicide Formulations
    A. Water-soluble concentrates
        1. Readily dissolve in water
        2. No further agitation required once dissolved
    B. Emulsifiable concentrates
        1. Readily mix with water
        2. Mild agitation may be required to maintain emulsion
    C. Flowables
        1. Finely ground solids or semi-solids put into a liquid that make the mixture form a suspension

D. Wettable powders

   1. Insoluble or only slightly soluble in water or oil

   2. Particles must be kept in suspension by mechanical or jet agitation during spraying operation

E. Granules and pellets

   1. Can be formulated with most herbicides

   2. Difficult to apply at low rates

IX. Factors determining herbicide application rate

   A. Texture of soil

   B. Organic matter of soil

   C. Size and condition of crops

   D. Size and condition of weeds

   E. Available moisture

   F. Height of sprayboom

X. Recommended herbicides for crops

   A. Corn - Atrazine (AAtrex) for broad leaf weeds, Alachlor (Lasso) - controls grass

   B. Sorghum - Propachlor (Ramrod 65 wp or Ramrod 206) - effective for grass control, Propazine (Milograd) and Terbutryn (Igram) - for a combination control of weeds and grass

   C. Soybeans - Trifluralin (Treflan) - control of grass, Chloramben, (Amiben) - controls grass and some broadleaf, Oryzalin (Surflan) - controls some broadleaf weeds

   D. Pasture and Range - Weeds - 2, 4-D, Woody Plants - 2,4,5,T, Round-up

   (NOTE: As new products are developed quite often and regulations allowances, use of chemicals change, check these recommendations with dealers in your community.)

XI. Factors determining application rate of herbicides

   A. Climate

      1. Temperature

      2. Wind

      3. Moisture

   B. State of plant growth

   C. Condition of plant

XII. Common Styles of Nozzles (Transparency 3)

A. Hollow and solid cone

B. Flooding flat

C. Regular flat fan

D. Chart illustrating nozzle styles

NOZZLE STYLES

Type	Suggested Use	Recommended Pressure (Pounds Per Square Inch)	Types of Spray Pattern
Solid and hollow cone	Insecticides and fungicides (foliar applications)	60 and above	Circular fan type pattern giving good penetration of sprayed surface
Flooding flat	Preemergence postemergence herbicides where drift is hazardous	5-20 for maximum drift control; never exceed 40	Coarse fan type pattern. Sprays wide surface, yet can be close to sprayed surface
Flat Fan	Weed and brush control	10-30; never over 40	Reasonably coarse spray in a fan type pattern that will overlap along a spray boom

XIII. Safety precautions

A. Follow Government recommendations

B. Use according to label instructions

C. Use herbicides only on recommended crops

D. Wear protective clothing

E. Guard against injury to other plants

F. Dispose of containers properly

XIV. Disposal of empty containers

A. Bury glass and metal containers

B. Burn paper containers

(NOTE: Proper disposal prevents toxic contamination of animals, plants, and humans.)

XV. Calculation of pounds of herbicide needed per acre

A. Formula calculation

1. $\frac{\text{lbs. per acre by 100\%}}{\text{strength of mixture}} = \text{lbs. of product required per acre}$

B. Examples

1. $\frac{\text{6 lbs. per acre active ingredient by 100\%}}{\text{50\% strength of mixture}} = \text{12 lbs. of product required per acre}$

2. $\frac{\text{4 lbs. per acre active ingredient}}{\text{4 lbs. per gallon product}} = \text{1 gallon of product required}$

(NOTE: The product label states the amount of active ingredients by percent by weight or pounds equivalent per gallon of liquid.)

XVI. Calibration of amount of spray delivered per acre

(NOTE: Accurate application is always important. The proper amount of herbicide applied uniformly, will give the best results. Careful calibration assures that the herbicide will be applied at the proper rate and in the recommended amount of water, evenly over the entire field.)

A. 100-foot method at 40-inch row spacing.

(NOTE: For other row spacings, change the measured distances. Instead of timing 100 feet, use the following distances:

Row spacing (inches)	36	32	28	24	20
Distance to time (feet)	113	128	146	170	200

1. Measure off 100 feet in the field to be sprayed. Clock the number of seconds it takes to spray rig to cover this distance in the gear and at the throttle setting selected for spraying Make several runs over the distance and average the time it takes. Mark the throttle setting.

2. With the rig standing still, engage the power take-off and set the throttle at spraying position. Set sprayer pressure at 30 pounds per square inch. Catch the output from several nozzles for the number of seconds it took to cover 100 feet in step 1. Determine the average output per nozzle in ounces.

3. Using 1 nozzle per row, the output in ounces per nozzle equals the gallons of spray mix that will be delivered per acre. Using 2 nozzels per row (nozzles on 20 inch centers on boom) multiply the average nozzle output by 2 to get the gallons applied per acre. Using 3 nozzles per row, multiply the average nozzle output by 3.

4. Divide, the capacity of your tank by the gallons applied per acre, as determined in Step 3, to find the number of acre, you can treat per tank of spray.

5. To determine how much herbicide to add to the tank, multiply the rate per acres recommended for your conditions by the number of acres your tank will cover, as determined in Step 4.

   (NOTE: There are many methods of calibrating a sprayer. The one described above is accurate and fairly simple.)

B. Example:

1. A sprayer travels 100 feet in an average of 15 seconds when the pressure gauge is set at 30 p.s.i. With the sprayer standing still, and the tractor in neutral and running at the selected throttle setting, the nozzles averaged 10 ounces output per nozzle in 15 seconds. Therefore, if one nozzle is used per 40 inch row, the sprayer will deliver 10 gallons per acre. If two nozzles are used per 40-inch row, the sprayer will deliver 20 gallons per acre.

C. Nozzle calibration by calculation

1. Measure off 200 feet. (NOTE: Drive the sprayer over this distance and determine the time required to travel this distance at the selected throttle setting. Make two or more runs and determine the average time required.)

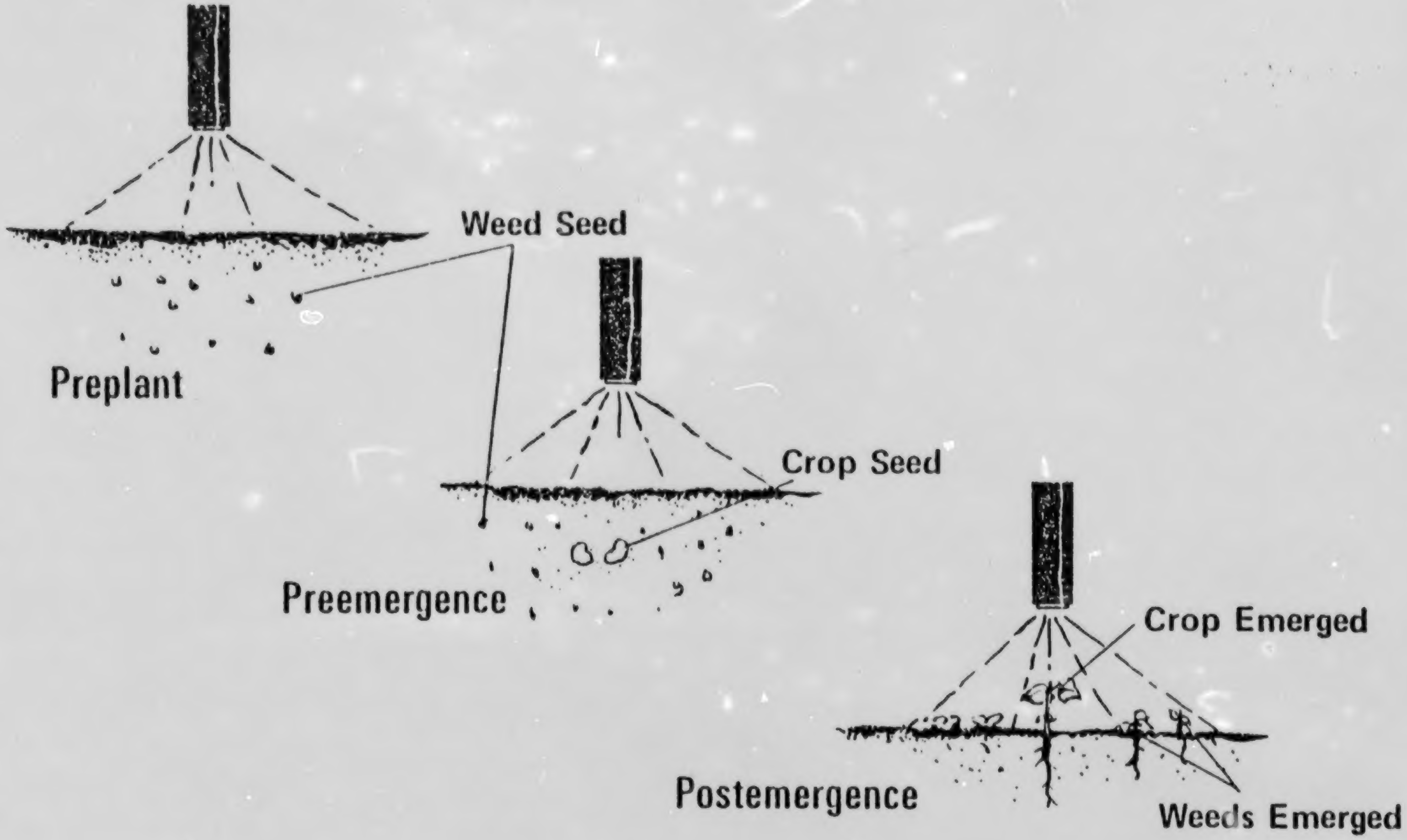
2. Place tractor in neutral gear.

3. Set throttle at spraying position. (NOTE: Take a kitchen measuring cup and catch the spray output from one nozzle for the same length of time as required for the sprayer to travel 200 feet. Repeat for several nozzles and calculate the average output in ounces per nozzle.)

4. Multiply answer by 66. (NOTE: This gives the number of ounces applied per nozzle per acre.)

5. Divide by 128. (NOTE: This gives number of gallons per acre. Answer will be number of gallons spray will apply per acre using one nozzle per row spaced 40 inches apart on the boom. If using two nozzles per row, nultiply answer by two; if using three nozzles per row, multiply answer by three.)

HERBICIDE CLASSIFICATIONS



Weed Seed

Preplant

Crop Seed

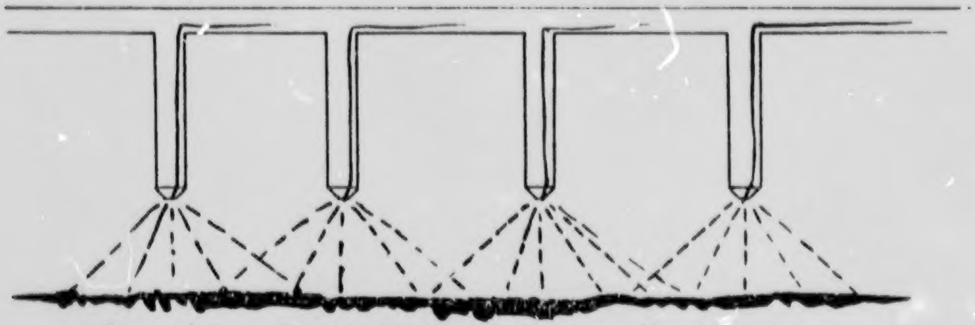
Preemergence

Crop Emerged

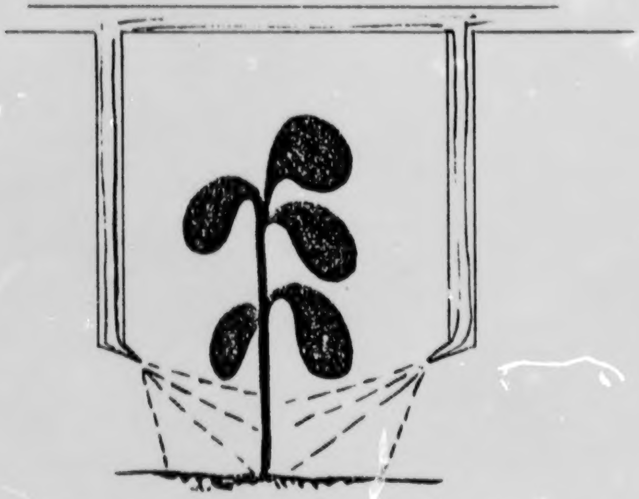
Postemergence

Weeds Emerged

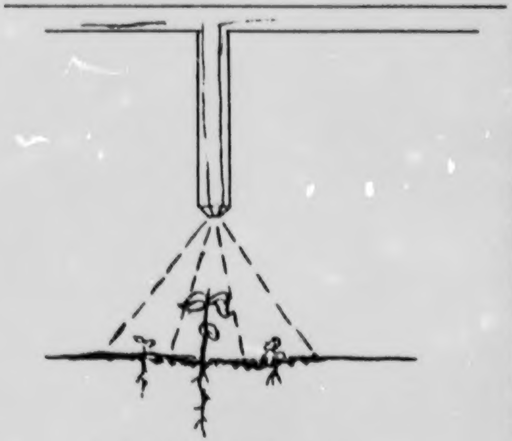
Application of Herbicides



Broadcast Spray Pattern Covers Entire Area

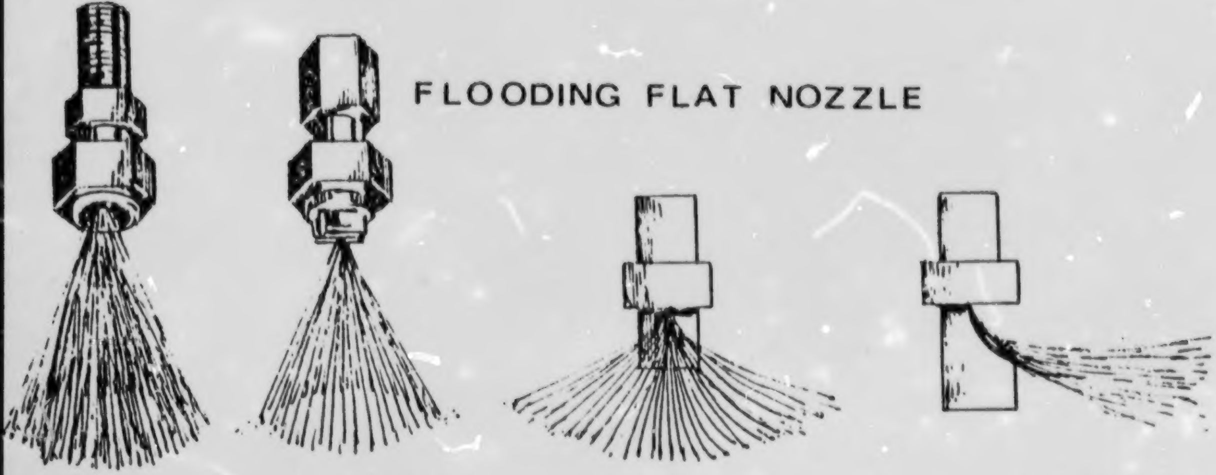


Directed Spray Beneath Plant Leaves



Band Spray Pattern
Over the Row

NOZZLE STYLES



FLOODING FLAT NOZZLE

SOLID and HOLLOW
CONE NOZZLES

REGULAR FLAT FAN NOZZLE

CHEMICAL WEED CONTROL
UNIT VI

ASSIGNMENT SHEET #1--WEED IDENTIFICATION

Complete the following form. Collect and identify the problem weeds found on your farm and check the way or ways in which they spread.

NAME OF WEED	RHIZOMES	ROOTSTOCK	SEED	STEM

CHEMICAL WEED CONTROL
UNIT VI

ASSIGNMENT SHEET #2--CALCULATING APPLICATION RATES OF HERBICIDES

Work the following problems and show your work.

1. A manufacturer recommends four pounds of a 50% wettable powder for spraying corn. How many pounds of this product would be required to spray a required acre?

2. A manufacturer recommends four pounds of an 80% wettable powder for spraying corn. How many pounds of this product would be required to spray a required acre?

3. A sprayer travels 100 feet within an average of 30 seconds. The pressure gauge indicates the unit will operate at 45 pounds pressure. Sprayer will put out ten ounces per nozzle in 30 seconds while in neutral position at 45 pounds pressure. How much spray will this sprayer deliver per acre when using nozzles per row?

CHEMICAL WEED CONTROL
UNIT VI

ANSWERS TO ASSIGNMENT SHEET #2

1. 8 pounds of the 50% wettalbe powder required per acre
2. 5 pounds of the 80% wettable powder requried per acre
3. 20 gallons per acre

CHEMICAL WEED CONTROL
UNIT VI

TEST

1. Define the following terms:
   a. Herbicides -
   b. Label -
   c. Perennial -
   d. Weed -
   e. Soil herbicides -

2. Name three ways weeds are propagated from one area to another.
   a.
   b.
   c.

3. Name four agents that contribute to the spreading of weeds.
   a.
   b.
   c.
   d.

4. List four factors with which weeds and crops compete.
   a.
   b.
   c.
   d.

5. Name five harmful effects of weeds
   a.
   b.
   c.
   d.
   e.

6. Match the methods of chemical treatments on the left with the appropriate statement on the right.

   a. Row or bank
   b. Direct spray
   c. Broadcast
   e. Spot

   _____1. Placing chemicals over the entire area at a uniform rate
   _____2. Placing chemicals directly over the rows
   _____3. Placing chemicals in limited areas infected with weeds
   _____4. Placing chemicals directly on a certain plant.

7. Identify the following terms:

   a. Preplant -

   b. Preemergence -

   c. Postemergence -

8. What are the five forms of herbicides?

   a.
   b.
   c.
   d.
   e.

9. What four factors determine the herbicide application rate?

   a.

   b.

   c.

   d.

10. List for each herbicide, the respective crop on which it should be used.

Herbicide	Crop
a. Propachlor	a.
b. Trifluralin	b.
c. 2,4-D	c.
d. Atrazine	d.
e. Propazine, Terbutryn	e.

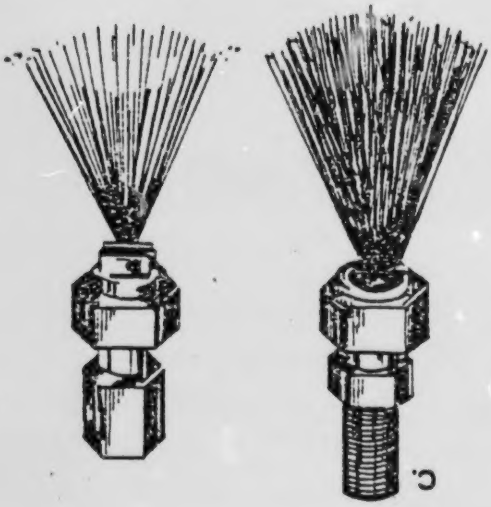
11. Name three factors determining when to apply herbicides.

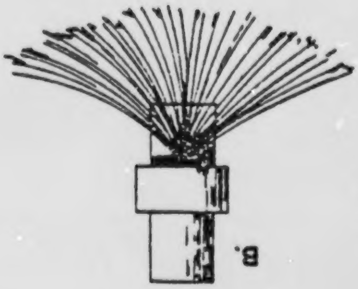
a.

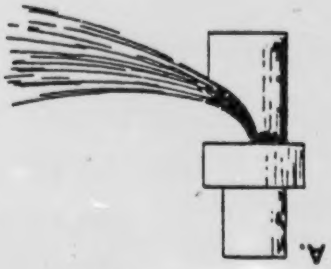
b.

c.

12. Identify the following types of nozzles.







a.____________________________________

b.____________________________________

c.____________________________________

13. Name six safety precautions to follow when applying herbicides.

a.

b.

c.

d.

e.

f.

14. Name two methods of properly disposing of empty herbicide containers.

15. How many pounds of 50% wettable powder will it take to spray a given acre of land? (The manufacturer recommended four pounds.)

16. How many gallons of spray are delivered per acre if a sprayer travels 200 feet in annaverage of 25 seconds with the pressure gauge indicating 50 pounds of pressure? (The nozzels averaged 12 ounces output per nozzle in 25 seconds.

CHEMICAL WEED CONTROL
UNIT VI

ANSWERS TO TEST

1. a. Herbicides - A chemical developed to control weeds
   b. Label - A legal identification attached to containers of any commercially sold agricultural chemical giving a summary of its properties and uses
   c. Perennial - A plant that normally lives for more than two years
   d. Weed - A plant more harmful than beneficial in its location
   e. Soil herbicides - A herbicide applied directly to the soil

2. a. Seeds
   b. Roots
   c. Stems

3. a. Wind
   b. Water
   c. Animals
   d. Man

4. a. Soil nutrients
   b. Moisture
   c. Light
   d. Carbon dioxide

5. Any five of the following:
   a. Reduced crop yields
   b. Reduces quality of crops
   c. Increases production costs
   d. Increases labor and equipment costs
   e. Lowers land value
   f. Harbors diseases and insects
   g. Damages livestock and people

6. 1. c
   2. a
   3. d
   4. b

7. a. Applying herbicides before the crop is planted
   b. Applying chemicals before the crop or weeds emerge
   c. Applying chemicals after the crop or weeds emerge

8. a. Water-soluble concentrates
   b. Emulsifiable concentrates
   c. Flowables
   d. Wettable powders
   e. Granules and pellets

9. Any four of the following:
   a. Texture of soil
   b. Organic matter of soil
   c. Size and condition of crops
   d. Size and condition of weeds
   e. Available moisture

10. a. Sorghum
    b. Soybeans
    c. Pasture weeds
    d. Corn
    e. Sorghum

11. a. Climate
    b. State of plant growth
    c. Condition of plant

12. a. Regular flat fan
    b. Flooding type flat
    c. Hollow cone

13. a. Follow government recommendations
    b. Use according to label instructions
    c. Use of herbicides only on recommended crops
    d. Wear protective clothing
    e. Guard against injury to other plants
    f. Dispose of containers properly.

14. a. Bury glass and metal containers
    b. Burn paper containers

15. 8 lbs.

16. 6.19 gallons

SOIL CONSERVATION PRACTICES

TERMINAL OBJECTIVES

After completion of this unit, the student should be able to distinguish between wind and water erosion and be able to recognize damage caused by erosion. The student should be able to establish conservation practices on his or her farm and in his or her community. This knowledge will be evidenced by scoring eighty-five percent on a unit test.

SPECIFIC OBJECTIVES

After completion, the student should be able to:

1. Define five terms associated with soil conservation practices.
2. Name the two types of erosion.
3. Name five conservation practices that are effective in reducing wind erosion.
4. List the four categories of water erosion.
5. List two physical factors that influence erosion.
6. Recognize factors that determine the type of cropping systems to use.
7. Name five management practices that aid in the control of erosion.
    - A. Name two common types of terraces and their main functions.
    - B. Name the best method of farming, yet maintaining terraces.
8. Survey your home farm to see how you rate as an FFA conservationist.
9. Survey your home community. List ten examples of poor conservation practices.

SOIL CONSERVATION PRACTICES

SUGGESTED ACTIVITIES

I. Instructor
   A. Provide students with objective sheet.
   B. Provide students with assignment and information sheets.
   C. Make transparencies.
   D. Discuss terminal and specific objectives.
   E. Discuss assignment and information sheets.
   F. Take field trip to observe poor conservation practices in the community.
   G. Have resource personnel speak to class.
   H. Give test.

II. Students
   A. Read objectives.
   B. Study information sheet.
   C. Participate in field trip.
   D. Complete assignment sheet and turn in to the instructor.
   E. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:
   A. Objectives
   B. Information sheet
   C. Transparency masters
      TM 1 - Wind Erosion Control Measures
      TM 2 - Terracing for Erosion Control
      TM 3 - Strip Cropping for Erosion Control
      TM 4 - Crop Rotation for Erosion Control
   D. Assignment sheets
      #1 - Locating Poor Conservation Practices
   E. Test
   F. Answers to test

II. References:

A. Fundamentals of Soil Science, Charles Earnest Millar, Lloyd M. Turk, H.D. Foth, John Wiley and Sons, Inc., New York, New York.

B. Introductory Soils, Kermit C. Berger, The MacMillan Company, New York, New York.

C. Instructional Materials for Vocational Agriculture I, Teaching Materials Center, Agricultural Education Department, Texas A & M University, College Station, Texas.

D. Our Soils and Their Management, Roy L Donahue, The Interstate Printers and Publishers, Inc., Danville, Illinois.

E. "How to Reduce Dust Storms", SC-318, Cooperative Extension Service & Agricultural Experiment Station, Kansas State University, Manhattan, Kansas 66506.

F. "Reducing Soil Erosion with Residue Management", SC-403, Cooperative Extension Service & Agricultural Experiment Station, Kansas State University, Manhattan, Kansas 66506.

G. "Controlling Wind Erosion", SC-409, Cooperative Extension Service & Agricultural Experiment Station, Kansas State University, Manhattan, Kansas 66506.

H. "Wind Erosion Control in South Central and Southwestern Kansas", SC-410, Cooperative Extension Service & Agricultural Experiment Station, Kansas State University, Manhattan, Kansas 66506.

I. "Use Stubble Mulch to Control Erosion in Western Kansas", SC-411, Cooperative Extension Service & Agricultural Experiment Station, Kansas State University, Manhattan, Kansas 66506.

SOIL CONSERVATION PRACTICES

INFORMATION SHEET

I. Terms and definitions

   A. Erosion - The removal of topsoil by wind and water.

   B. Water Outlet - A ditch which carries the excess water of the farm.

   C. Terracing - A structure designed to slow down running water and control erosion on sloping land.

   D. Crop Rotation - The rotation of a field from a row crop to a sod type crop.

   E. Strip Cropping - The practice of planting crops in narrow strips, in which close-growing crops are grown next to cultivated crops.

   F. Diversion Ditches - Ditches which prevent erosion by diverting water around a field rather than across.

   G. Cover Crop - A crop used to cover the soil surface to decrease erosion.

   H. Waterway - Protected seeded channels, usually broad and slightly sloping into which the water carried by the terraces is dumped.

II. Types of erosion

   A. Wind

   B. Water

III. Wind erosion control measure (Transparency 1)

   A. Stubble mulching

   B. Strip cropping

   C. Prevention of burning

   D. Prevention of overgrazing

   E. Moisture conservation

   F. Emergency cover crops

   G. Emergency tillage operations

   H. Wind break tree planting

   I. Shelter belt of trees

IV. Categories of water erosion
   A. Splash
   B. Sheet
   C. Rill
   D. Gully

V. Physical factors that influence erosion
   A. Amount of and intensity of rainfall and wind
   B. Type and condition of vegetative cover
   C. Nature of the soil
   D. Slope of the land

VI. Factors determining cropping systems
   A. Slope
   B. Erodibility
   C. Drainage
   D. Moisture
   E. Depth
   F. Fertility
   G. Economics

VII. Erosion control (Transparencies 2, 3, and 4)
   A. Use of land
   B. Water control systems
      1. Terracing
      2. Diversion ditch
      3. Strip cropping
      4. Crop rotation
      5. Water outlets
      6. Row directions
      7. Farming on contour
   C. Cover crops
   D. Control of gullies
   E. Fertilizer

VIII. Common types of terraces and their primary function

A. Channel - Primarily a drainage channel, has a wide, shallow channel

B. Ridge - Primarily used to increase water absorption, used in areas of low rainfall

C. Bench - Used on very steep slopes to slow down flow of runoff water

IX. Farming terraced land

(NOTE: Always farm on contour - plow and plant parallel to the terraces.)

WIND EROSION CONTROL MEASURES

A. STRIP CROPPING

B. PREVENTION OF BURNING

C. PREVENTION OF GRAZING

D. MOISTURE CONSERVATION

E. EMERGENCY COVER CROPS

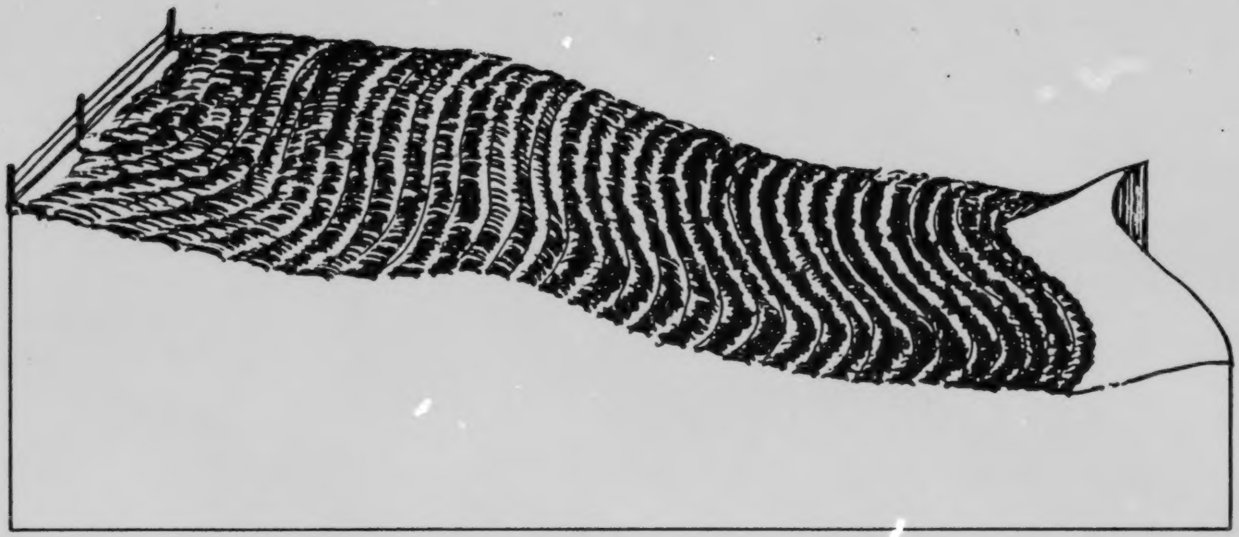
F. EMERGENCY TILLAGE OPERATIONS

G. WIND BREAK TREE PLANTING

H. SHELTER BELT OF TREES

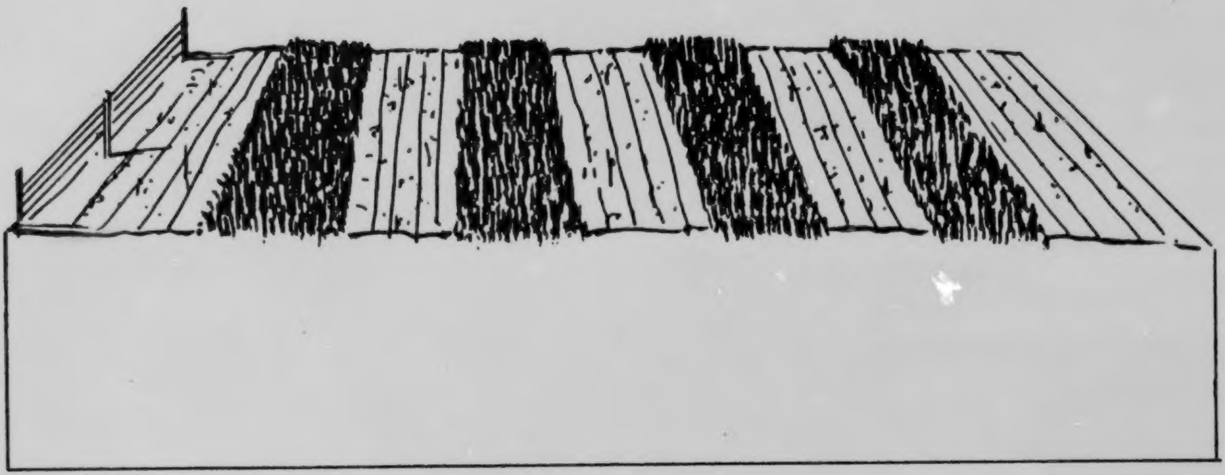
I. STUBBLE MULCHING

Terracing
for Erosion Control

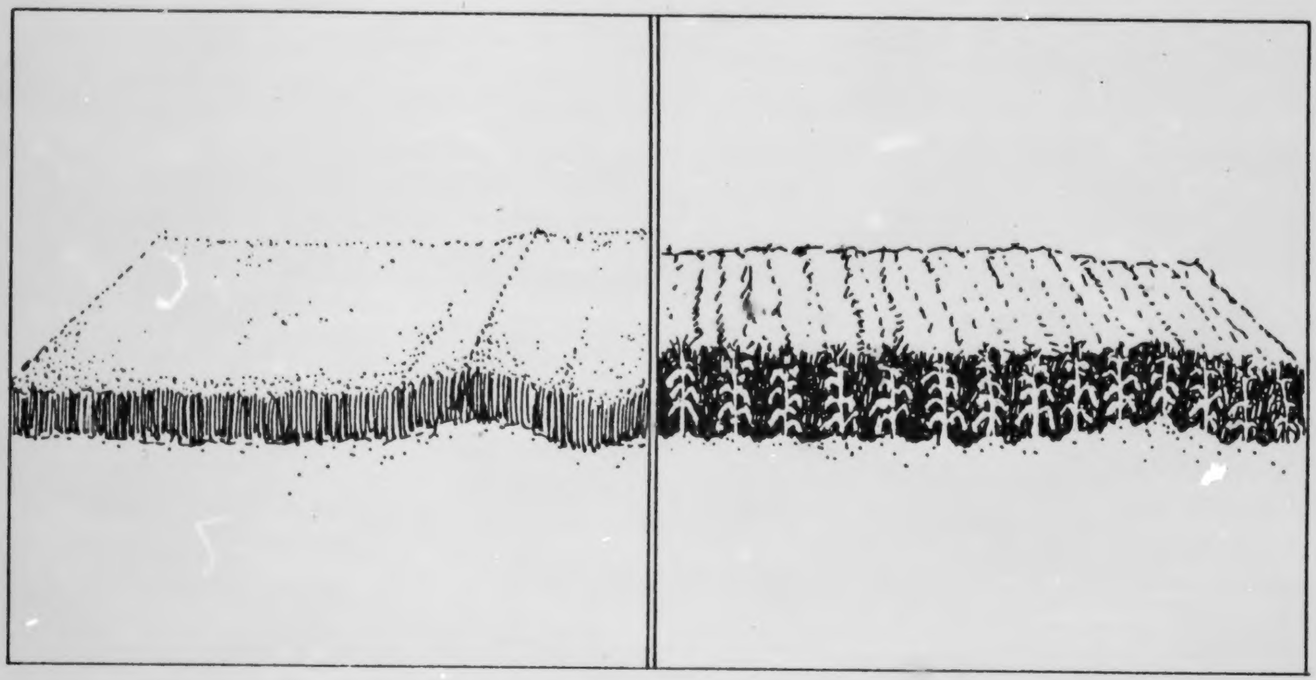


409

Strip Cropping
for Erosion Control



Crop Rotation for Erosion Control



SOIL CONSERVATION PRACTICES

ASSIGNMENT SHEET #1 - LOCATING POOR CONSERVATION PRACTICES

Survey your home community and list ten examples of poor conservation practices.

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

SOIL CONSERVATION PRACTICES

TEST

1. Define the following terms:
   - a. Terracing -
   - b. Cover Crop -
   - c. Erosion -
   - d. Diversion Ditch -
   - e. Water Outlet -

2. What are the two types of erosion?
   - a.
   - b.

3. Name five conservation practices that are effective in reducing wind erosion.
   - a.
   - b.
   - c.
   - d.
   - e.

4. Name the four categories of water erosion.
   - a.
   - b.
   - c.
   - d.

5. Name two physical factors that influence erosion.
   - a.
   - b.

6. Place an "X" beside the term or phrase that aids in determining the type of cropping system to use.

_____a. Moisture
_____b. Temperature
_____c. Fertility
_____d. Slope
_____e. Drainage

7. Name five management practices that aid in the control of erosion.

a.
b.
c.
d.
e.

8. Name two common types of terraces and their main functions:

Terrace Name	Function
a.	
b.	

9. Name the recommended method of farming terraces and terraced land.

SOIL CONSERVATION PRACTICES

ANSWERS TO TEST

1. a. Terracing - A structure designed to slow down running water and control erosion on sloping land.

   b. Cover Crop - A crop used to cover the soil surface to decrease erosion.

   c. Erosion - The removal of topsoil by wind and water.

   d. Diversion Ditch - Ditch which prevents erosion by diverting water around a field rather than across.

   e. Water Outlet - A ditch which carries the excess water off the farm.

2. a. Wind

   b. Water

3. Any five of the following:

   a. Strip cropping

   b. Prevention of burning

   c. Prevention of overgrazing

   d. Moisture conservation

   e. Emergency cover crops

   f. Emergency tillage operations

   g. Wind break tree planting

   h. Shelter belt of trees

   i. Stubble mulching

4. a. Splash

   b. Sheet

   c. Rill

   d. Gully

5. a. Amount of intensity of rain or wind and/or type and condition of vegetative cover.

   b. Nature of soil and/or slope

6. X a. Moisture
   ____ b. Temperature
   X c. Fertility
   X d. Slope
   X e. Drainage

7. a. Use of land
   b. Water disposal systems
   c. Cover crops
   d. Control of gullies
   e. Fertilizer

8.

Terrace Type	Function
a. Channel	Primarily for drainage
b. Ridge	Primarily to increase water absorption
c. Bench	Slow down runoff

9. Contour - farm parallel to terraces

SEED SELECTION

TERMINAL OBJECTIVES

After completion of this unit, the student should be able to select good quality seeds. The student should be able to recognize noxious weeds and classify them as either primary or secondary. The student should adapt these skills to his or her home farm and community. This knowledge will be evidenced by scoring eighty-five percent on a unit test.

SPECIFIC OBJECTIVES

After completion, the student should be able to:

1. Write the definition of five terms associated with seed selection.
2. Name five factors to look for in selecting high quality seeds.
3. Identify ten noxious weeds.
4. Classify noxious weeds as primary or secondary.
5. List eight procedures to follow in handling and storing home grown seeds.
6. Name two methods of obtaining good seeds.
7. Name the six requirements that must be found on all Kansas seed labels.

SEED SELECTION

SUGGESTED ACTIVITIES

I. Instructor:

   A. Provide students with objective sheet

   B. Provide students with information and assignment sheets

   C. Make transparencies

   D. Discuss terminal and specific objectives

   E. Discuss information and assignment sheets

   F. Conduct field trip to allow students to collect noxious weeds

   G. Give test

II. Students:

   A. Read objectives

   B. Study information sheets

   C. Complete assignment sheet and turn in to the instructor

   D. Take test

INSTRUCTIONAL MATERIALS

I. Included in this unit:

   A. Objectives

   B. Information sheets

   C. Transparency masters

      TM 1 - Prohibited Noxious Weeds
      TM 2 - Restricted Noxious Weeds
      TM 3 - Seed Label Requirements

   D. Assignment sheet

      #1 - Collecting and Identifying Noxious Weeds

   E. Test

   F. Answers to test

II. References:

A. Send request for rules and regulations for specific crops to: Kansas Crop Improvement Association, Call Hall, Kansas State University, Manhattan, Kansas 66506.

B. Seeds, The Yearbook of Agriculture, The United States Dept. of Agriculture, Washington, D.C.

C. Crop Production, Harold D. Hughes, Darrel S. Metcalf, Iver J. Johnson, The Macmillan Company, New York, New York.

D. Instructional Materials for Vocational Agriculture I, Teaching Materials Center, Agricultural Education Department, Texas A & M University, College Station, Texas.

E. "Weeds of the North Central States", NCR-36, Cooperative Extension Service & Agricultural Experiment Station, Kansas State University, Manhattan, Kansas 66506.

F. "Chemical Weed Control in Horticultural and Forestry Plants", SRP-344, Cooperative Extension Service & Agricultural Experiment Station, Kansas State University, Manhattan, Kansas 66506.

SEED SELECTION

INFORMATION SHEET

I. Terms and definitions

  A. Seed - A plant embryo and stored food materials surrounded by a seed coat

  B. Registered seed - The seed that is directly from the originator of a new variety or from previously registered seed and has been certified by a certifying agency to insure varietal identity and genetic purity

  C. Certified seed - The bulk of improved seed for sale for commercial growing that has been derived from the progency of foundation, registered, or certified seed and has been certified by a certifying agency to assure varietal identity and genetic purity

  D. Foundation seed - Seed stocks that are handled so as to assure varietal identity and most nearly maintain genetic purity and that have been certified by a certifying agency or agriculture experimental station

  E. Pure seed - The percentage of seed that will produce plants true to variety and type

  F. Inert matter - The percentage by weight of chaff, broken seeds, stems, and soil particles

  G. Hard seed - The seed which remains hard at the end of the prescribed test because it has not absorbed water, due to an impermeable seed coat

  H. Pure live seed - The amount of seed that when planted will produce plants

  I. Breeder seed - The seed used by the breeder to maintain the strain or variety

II. Factors to consider in selecting high quality seed

  A. Size and plumpness

  B. Color of seed coat

  C. Free of disease

  D. Free of broken seeds and noxious weeds

  E. Free of insects

III. Noxious weeds
    A. Prohibited (Transparency 1)
        1. Field Bindweed
        2. Hoary Cress
        3. Johnsongrass
        4. Russian Knapweed
        5. Musk Thistle
        6. Quackgrass
        7. Canada Thistle
        8. Texas Blueweed
        9. Burragweed
        10. Pignut
        11. Leafy Spurge
    B. Restricted (Transparency 2)
        1. Dodder
        2. Goatgrass
        3. Wild Onion or Garlic
        4. Downy Brome
        5. Curled Dock
        6. Morning Glory
        7. Silverleaf Nightshade
        8. Pennycress
        9. Wild Buckwheat
        10. Giant Foxtail
        11. Horse Nettle
        12. Cheat

IV. Handling and storing seeds
    A. Use certified seeds first planting
    B. Select clean-grown seed
    C. Control weeds
    D. Prevent seed from mixing
    E. Store in cool, dry place
    F. Treat seed for insects and disease control
    G. Test seed for germination
    H. Inspect seed during storage

V. Methods of securing good quality seeds
  A. Home grown
  B. Reliable seed dealers

VI. Requirements found on seed label (Transparency 3)
  A. Kind, variety, and origin
  B. Lot number
  C. Percentage of purity
  D. Percentage of inert matter
  E. Percentage of weed seed
  F. Percentage of other agricultural seeds

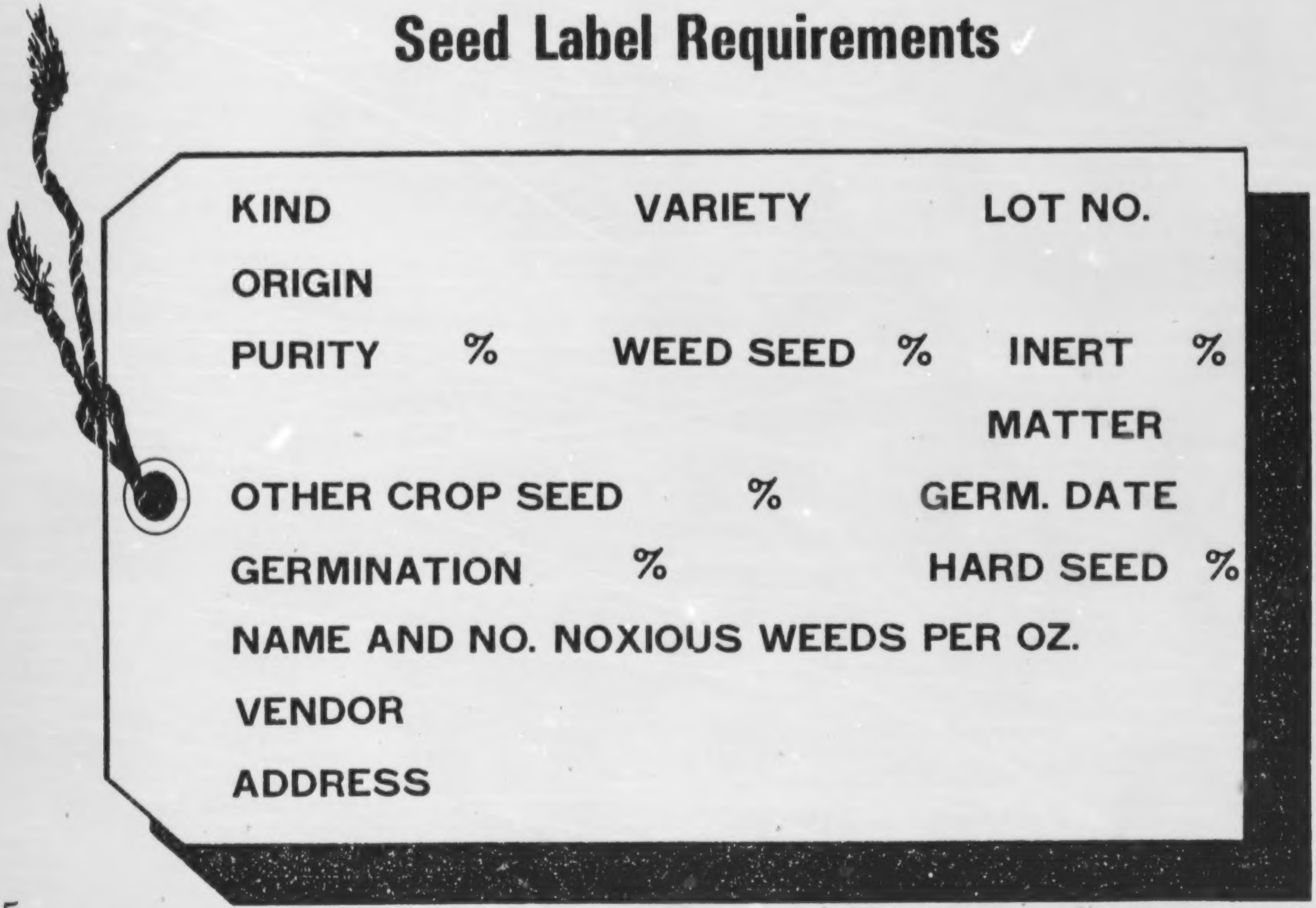
PROHIBITED NOXIOUS WEEDS

Field Bindweed
Canada Thistle
Johnsongrass
Leafy Spurge
Hoary Cress
Pignut
Quackgrass
Texas Blueweed
Russian Knapweed
Burragweed
Musk Thistle

RESTRICTED NOXIOUS WEEDS

Curled Dock
Giant Foxtail
Dodder
Wild Buckwheat
Downy Brome
Cheat
Silverleaf Nightshade
Pennycress
Horsenettle
Morningglory
Goatgrass
Wild Onion or Garlic

Seed Label Requirements



KIND VARIETY LOT NO.

ORIGIN

PURITY % WEED SEED % INERT MATTER %

OTHER CROP SEED % GERM. DATE

GERMINATION % HARD SEED %

NAME AND NO. NOXIOUS WEEDS PER OZ.

VENDOR

ADDRESS

SEED SELECTION

ASSIGNMENT SHEET #1 - COLLECTING AND IDENTIFYING NOXIOUS WEEDS

Collect ten noxious weeds found in your local community and bring to class. List the weeds below and classify them as either primary (prohibited) or secondary (restricted) noxious weeds.

NAME	Primary (Prohibited)	Secondary (Restricted)
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

SEED SELECTION

TEST

1. Define the following terms:
   a. Registered seed -
   b. Foundation seed -
   c. Breeder seed -
   d. Seed
   e. Pure seed -

2. List five factors to look for in selecting high quality seeds.
   a.
   b.
   c.
   d.
   e.

3. Classify the following list of noxious weeds as either prohibited or restricted. Place number "1" in the blank indicating prohibited and number "2" indicating restricted.
   a. _____Curled Dock
   b. _____Wild Onion or Garlic
   c. _____Dodder
   d. _____Field Bindweed
   e. _____Johnsongrass
   f. _____Cheat
   g. _____Canada Thistle
   h. _____Pennycress
   i. _____Pignut
   j. _____Horsenettle
   k. _____Silverleaf Nightshade
   l. _____Burragweed
   m. _____Leafy Spurge
   n. _____Morning Glory
   o. _____Hoary Cress
   p. _____Russian Knapweed

4. Name eight procedures to follow in storing and handling home-grown seeds.
   a.
   b.
   c.
   d.

e.

f.

g.

h.

5. Name two methods of obtaining good quality seeds.

a.

b.

6. Name the six requirements that must be found on all Kansas seed labels.

a.

b.

c.

d.

e.

f.

SEED SELECTION

ANSWERS TO TEST

1. a. Registered seed - The seed that is directly from the originator of a new variety or from previously registered seed and has been certified by a certifying agency to insure varietal indentity and genetic purity

   b. Foundation seed - Seed stocks that are handled so as to assure varietal identity and most nearly maintain genetic purity and that have been certified by a certifying agency or agriculture experimental station

   c. Breeder seed - The seed used by the breeder to maintain the strain or variety

   d. Seed - A plant embryo and stored food materials surrounded by a seed coat

   e. Pure seed - The percentage of seed that will produce plants true to variety and type

2. a. Size and plumpness

   b. Color of seed coat

   c. Free of disease

   d. Free of broken seeds and noxious weeds

   e. Free of insects

3. a. 2
   b. 2
   c. 2
   d. 1
   e. 1
   f. 2
   g. 1
   h. 2
   i. 1
   j. 2
   k. 2
   l. 1
   m. 1
   n. 2
   o. 1
   p. 1

4. a. Use certified seeds first planting

   b. Select clean-grown seeds

   c. Control weeds

   d. Prevent seeds from mixing

e. Store in cool, dry place
f. Treat seeds for insects and disease control
g. Test seeds for germination
h. Inspect seed during storage

5. a. Home grown
b. Reliable seed dealers

6. a. Kind, variety, and origin
b. Lot number
c. Percentage of purity
d. Percentage of inert matter
e. Percentage of weed seed
f. Percentage of other agricultural seeds

PLANT GROWTH AND REPRODUCTION

TERMINAL OBJECTIVES

After completion of this unit, the student should be able to recognize the processes involved in plant growth and reproduction. The student should be able to identify and recognize the functions of the principal parts of plants and be able to recognize some of the causes of poor seed germination. This knowledge will be evidenced by scoring eighty-five percent on a unit test.

SPECIFIC OBJECTIVES

After completion, the student should be able to:

1. Define five terms associated with plant growth and reproduction.
2. Label the important parts of a plant from a drawing and discuss two functions of each part.
3. Distinguish between the two main types of root systems.
4. Label a drawing showing the different parts of a plant stem.
5. Recognize and name the stages of seed germination.
6. Name the requirements for good seed germination.
7. List three factors that cause poor seed germination.
8. Recognize and list the substances that have to be present before photosynthesis will occur.
9. Recognize and list the steps in the process of manufacturing of plant food with photosynthesis.
10. Name three ways a plant absorbs nutrients.
11. Distinguish between photosynthesis and respiration.
12. Label a drawing showing the parts of a complete flower.
13. Recognize methods of pollination.
14. Name five methods of vegetative reproduction.

PLANT GROWTH AND REPRODUCTION

SUGGESTED ACTIVITIES

I. Instructor
   A. Provide student with objective sheet
   B. Provide student with information sheet
   C. Make transparencies
   D. Discuss terminal and specific objectives
   E. Discuss information sheets
   F. Plant seeds to demonstrate how germination occurs
   G. Conduct field trip to demonstrate the process of pollination
   H. Give test

II. Students
   A. Read objective sheet
   B. Study information sheet
   C. Observe seed during the process of germination
   D. Take test

INSTRUCTIONAL MATERIALS

I. Included in this unit:
   A. Objectives
   B. Information sheet
   C. Transparency masters
      TM 1 - Parts of Plant
      TM 2 - Root Types
      TM 3 - Germination of a Bean Seed
      TM 4 - Germination of a Corn Seed
      TM 5 - Photosynthesis
      TM 6 - Cross Pollination
      TM 7 - Self-Pollination
      TM 8 - Pollination by Insects
      TM 9 - Parts of Stem
      TM 10- Parts of Flower
      TM 11- Respiration vs. Photosynthesis
   D. Test
   E. Answers to test

II. References

A. *Crop Production*, Harold D. Hughes, Edwin R. Henson, The Macmillan Company, New York.

B. *Producing Farm Crops*, Harold K. Wilson, A. Chester Richer, The Interstate Printers and Publishers, Inc., Danville, Illinois.

C. *Plant Science*, State Department of Education, Agriculture Education Section, University of Missouri, Agricultural Ed. Department.

D. *Instructional Materials for Vocational Agriculture I*, Teaching Materials Center, Agricultural Education Department, Texas A & M University, College Station, Texas.

E. "When to Expect Late-Spring and Early-Fall Freezes", SB-415, Cooperative Extension Service & Agricultural Experiment Station, Kansas State University, Manhattan, Kansas 66506.

F. "An Easy Method of Estimating Potential Evapotranspiration", SRL-30, Cooperative Extension Service & Agricultural Experiment Station, Kansas State University, Manhattan, Kansas 66506.

PLANT GROWTH AND REPRODUCTION

INFORMATION SHEET

I. Terms and definitions

   A. Germination - The changing of a dormant embryo to active status

   B. Fertilization - The union of the male (pollen) nucleus with the female (egg) cell

   C. Pollination - The transfer of pollen from the anther to the stigma

   D. Embryo - The rudimentary plantlet within seed; the germ

   E. Pollen - The male sex cells produced in the anthers of flowering plants

   F. Pistil - The seed-bearing organ of a flower composed of the ovary, style, and stigma

   G. Photosynthesis - The process by which carbohydrates are manufactured by the cholorphyll-bearing cell granules from CO_2 and water by means of the energy of sunlight

   H. Ovule - The female sex cell with the immediate surrounding parts; the future seed

   I. Respiration - The taking in of oxygen and giving off of carbon dioxide

   J. Transpiration - The evaportation of moisture through the leaves

   K. Chlorophyll - The green vegetable pigment of plants essential in the process of photosynthesis

   L. Monocotyledon - A plant having one cotyledon, as in grasses

   M. Dicotyledon - A plant which produces two seed leaves

   N. Imperfect flower - A flower lacking either stamens or pistils

   O. Perfect flower - Having both pistil and stamens

   P. Monoecious plant - Both sexes present on same plant

   Q. Dioecious plant - Sexes are on different plants

   R. Rhizome - Plant stems horizontal below ground; usually sending up a plant and sending down roots at the node

   S. Seed inoculation - The application of nitrogen fixing bacteria to the seed of legumes or to the soil in which legumes are to be grown

   T. Secondary root - A branch of the main root

U. Primary root - The root that develops when the seed germinates and grows from the lower end of the embryo

V. Stolen - A horizontal above ground stem which produces a plant with root and shoot at the nodes. Examples of stolens are strawberries and bermuda grass

W. Plumule - The small stem like primary bud of an embryo or germinating seed plant. It emerges from the ground and develops tree leaves

X. Scarification - The process of scratching and/or cutting hard seed coats to allow for greater germination rates

II. Plant parts (Transparency 1)

- A. Roots
  - 1. Absorb water and minerals
  - 2. Store food
  - 3. Anchor plant
- B. Stem
  - 1. Supports leaves
  - 2. Aids in manufacturing plant food from leaves
  - 3. Serves as food storage areas
- C. Leaf
  - 1. Manufactures food for the plant
  - 2. Transpiration (evaporation of water)
  - 3. Serves as food storage
- D. Bud or flower
  - 1. Reproduction
  - 2. Stores food - seeds and fruits

III. Root types (Transparency 2)

- A. Tap
  - 1. Cotton
  - 2. Alfalfa
- B. Fibrous
  - 1. Grasses
  - 2. Cereal grains

IV. Steps of germination (Transparencies 3 and 4)
   A. Absorption of water and oxygen into seed
   B. Seed swells and seed coat ruptures
   C. Primary (temporary) root goes down
   D. First internode goes up
   E. New leaves form and food production starts

V. Requirements for seed germination
   A. Proper temperature
      1. Ranges from 32 to 120 degrees Fahrenheit
      2. Most seeds germinate from 68 to 86 degrees Fahrenheit
   B. Sufficient moisture
   C. Ample supply of oxygen

VI. Causes of poor seed germination
   A. Mechanical injury (cracked grain drying too fast)
   B. Disease
   C. Storage conditions
   D. Old seed
   E. Temperature too cold
   F. Hard seed coat (scarify hard-coated legumes)
   G. Drying out of soil
   H. Planting too deep
   I. Chemical damage (fertilizer)
   J. Immature seed

VII. Requirements of photosynthesis
   A. Light, CO_2, water essential nutrients
   B. Favorable temperature
   C. Living cells containing chlorophyll

VIII. Steps of photosynthesis (Transparency 5)
   A. CO_2 taken in by leaves

B. H_2O taken in by roots

C. $CO_2 + H_2O \xrightarrow[\text{Chlorophyll}]{\text{Light}} C_6H_{12}O_6 + O_2$

D. Plants convert sugar to starch or reverse the process as needed to build protein, fats, or energy

IX. Absorption of nutrients and water

A. Diffusion - The movement of gases or liquids from an area of higher concentration to an area of lower concentration

B. Osmosis - The movement of a substance from the place of greater concentration through a thin, semi-permeable membrane to the place of lesser concentration

C. Non-root feeding - Nutrients and water entering plant through leaves and stems

X. Means of pollination (Transparencies 6,7, and 8)

A. Gravity

B. Wind

C. Insect

D. Man

1. Hybrids - The first generation offspring of a cross between two inbred lines

a. Single cross - the progeny obtained by crossing two inbred lines

b. Double cross - the progeny resulting from crossing two single crosses

2. Mechanical pollination

E. Animals

F. Birds

XI. Parts of flower (Transparencies 9 and 10)

A. Pistil - Female part where egg cells originate

1. Stigma - Upper part of pistil which holds pollen

2. Style - Supports stigma

3. Ovary - Produces ovule or ovules which develop into seed or seeds

B. Stamen - Male part of flower

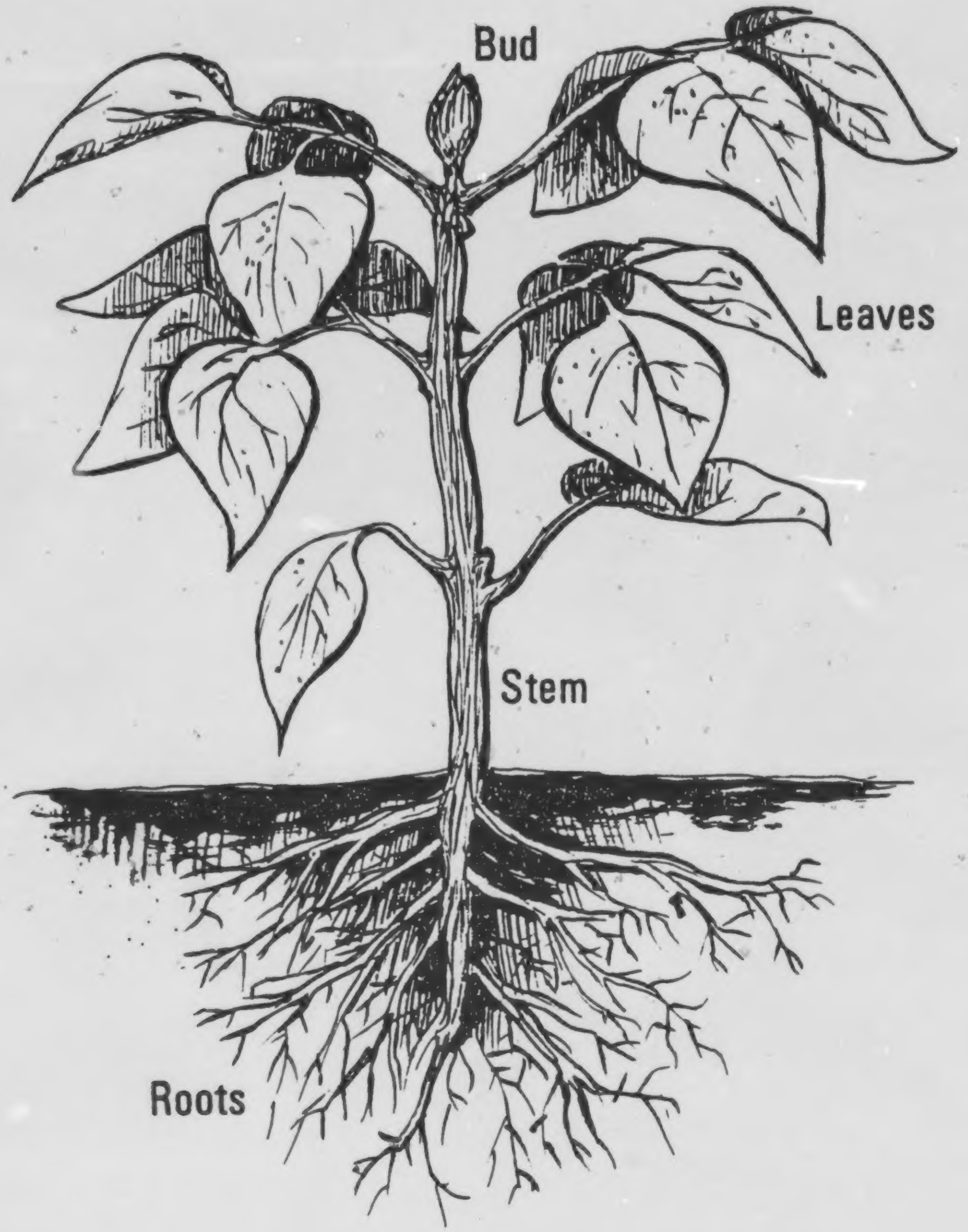
1. Filament - Supports anther

2. Anther - Bears the pollen

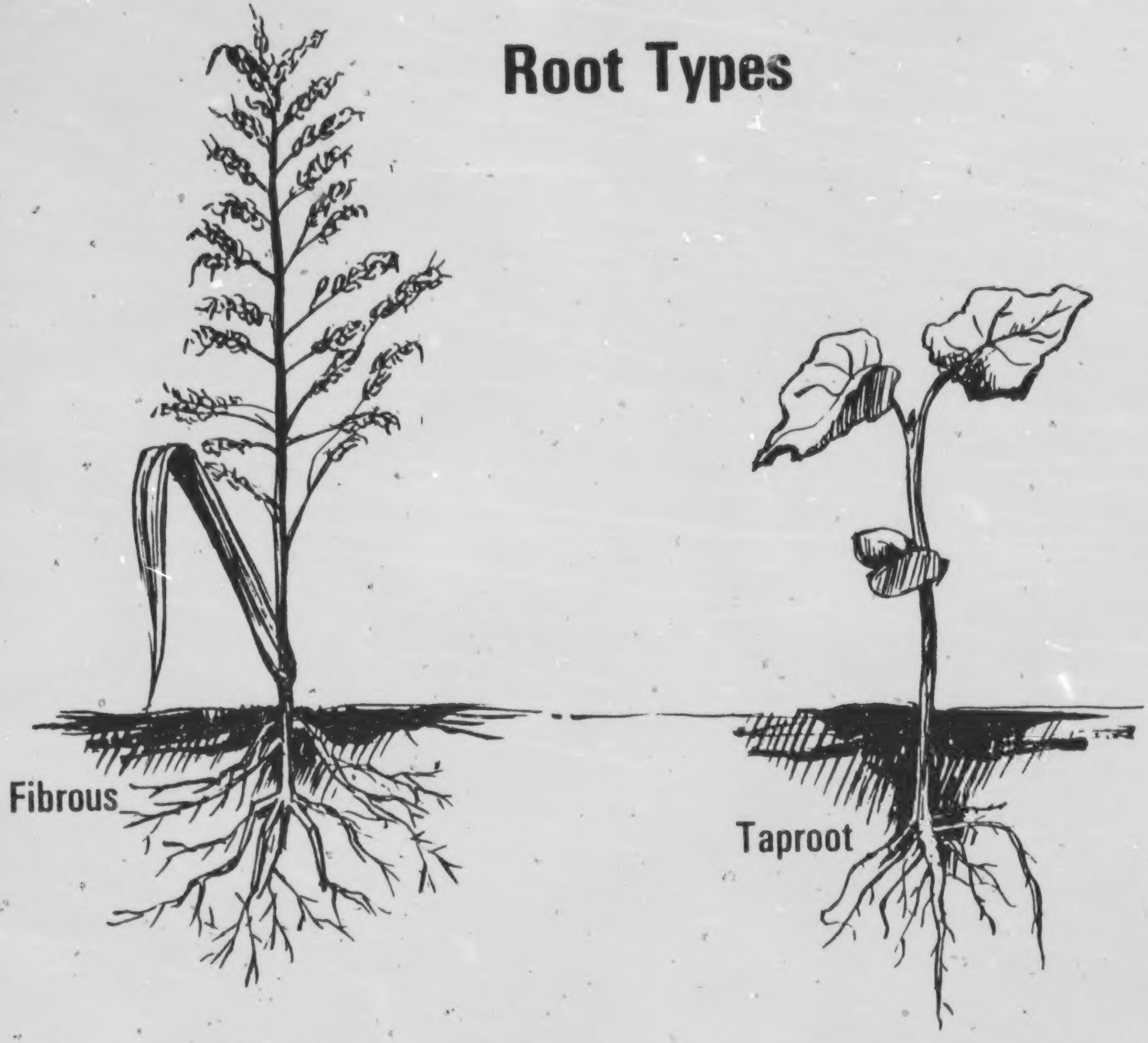
C. Accessory organs - Protect the essential organs of the plant
    1. Corolla - Petals of the flower
    2. Calyx - Located below the petals
    3. Receptacle - Top part of lower stalk
    4. Micropyle - Opening of pollen tubes

XII. Vegetative reproduction
    A. Tubes
    B. Roots
    C. Stolon
    D. Stem
    E. Rhizomes

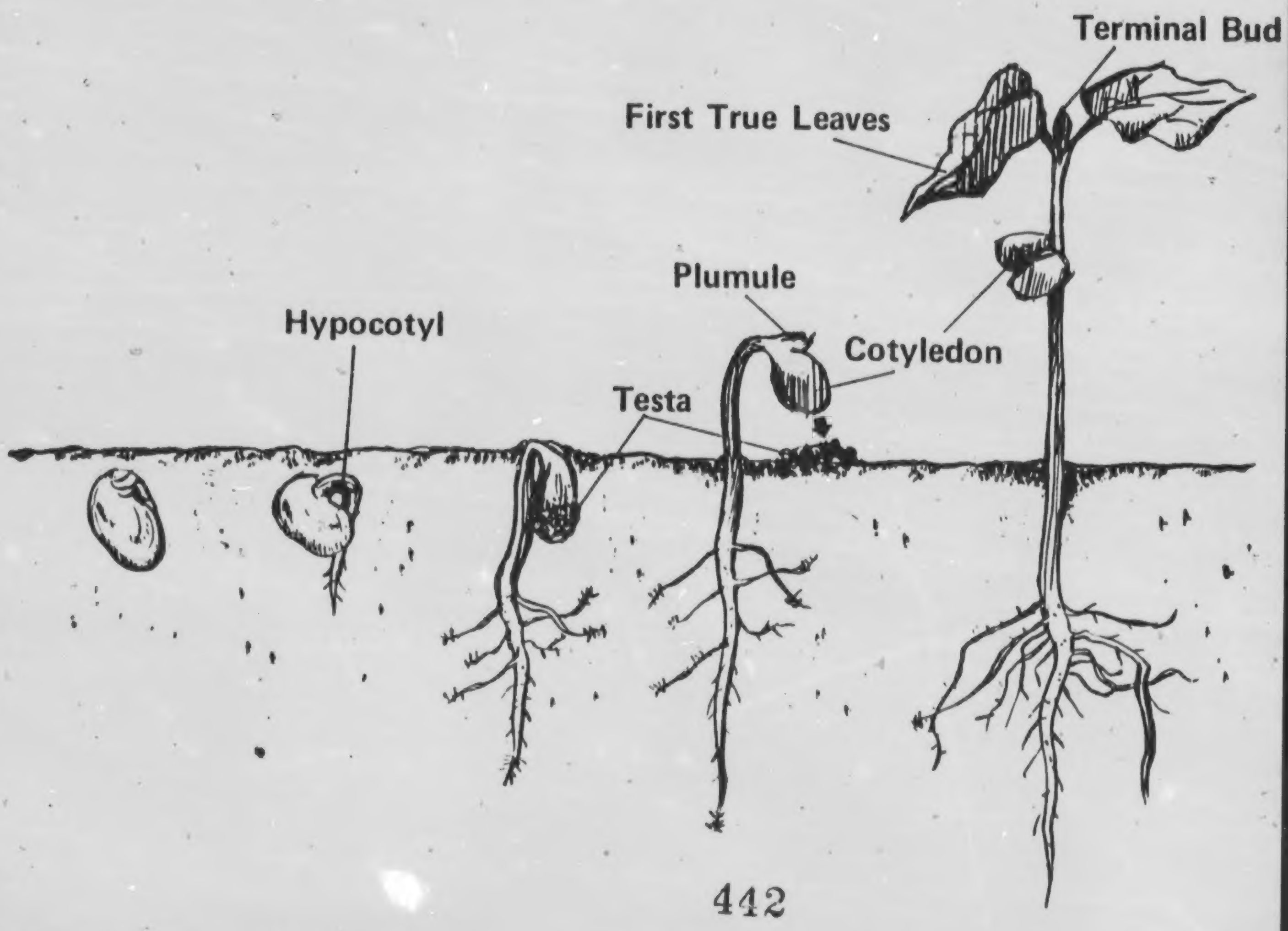
Parts of Plant


Bud
Leaves
Stem
Roots

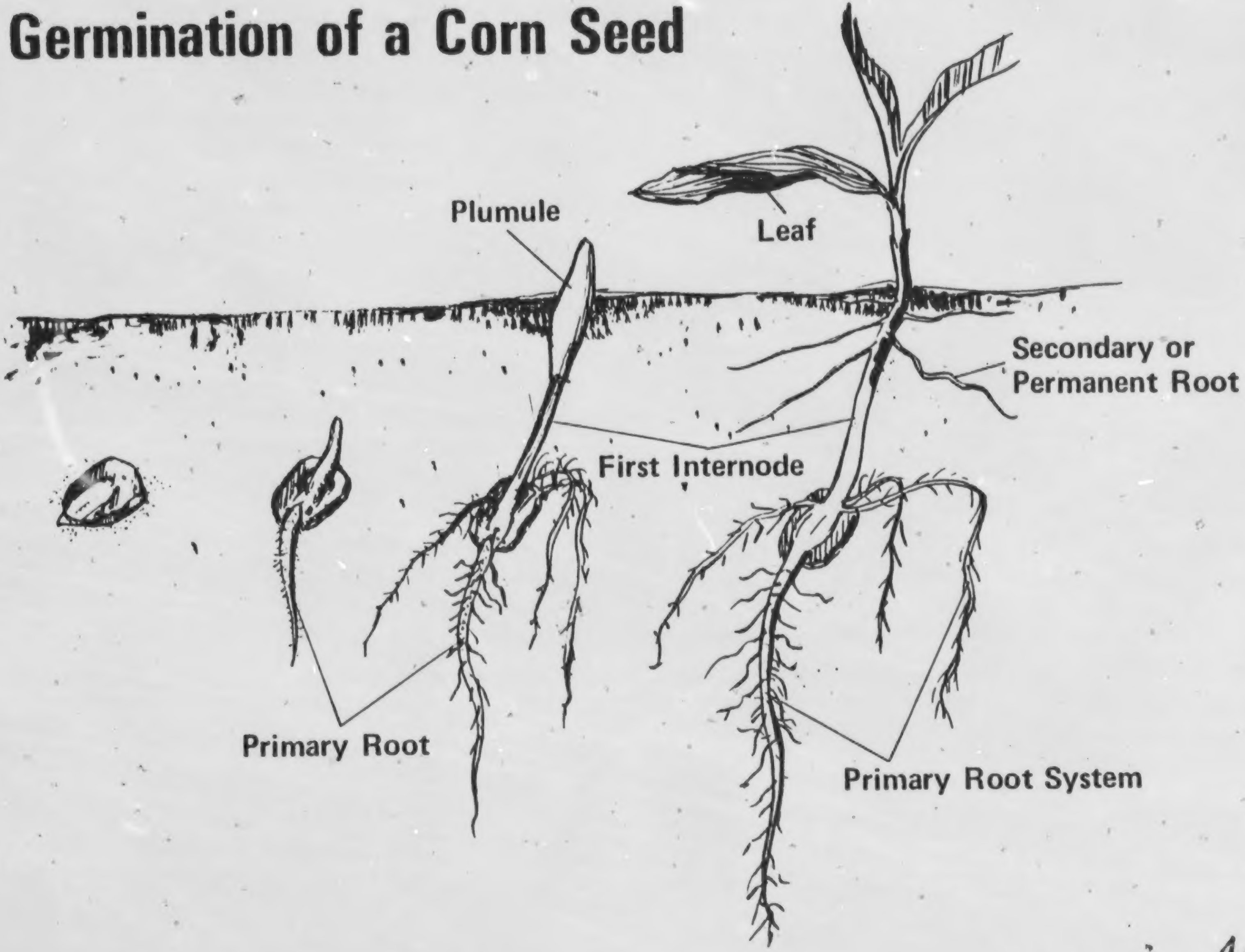
Root Types


Fibrous
Taproot

Germination of a Bean Seed

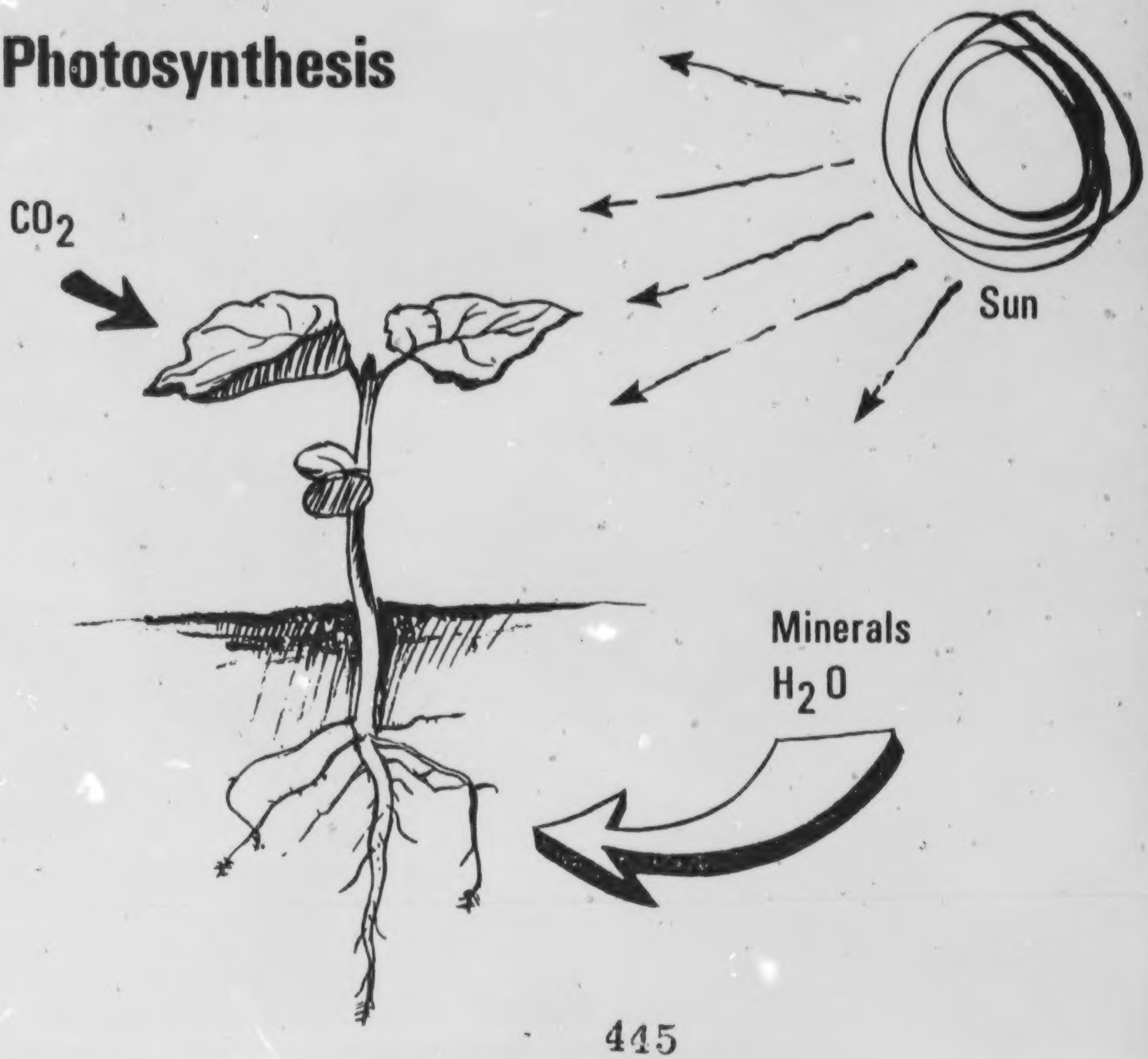

Terminal Bud
First True Leaves
Plumule
Hypocotyl
Cotyledon
Testa

Germination of a Corn Seed

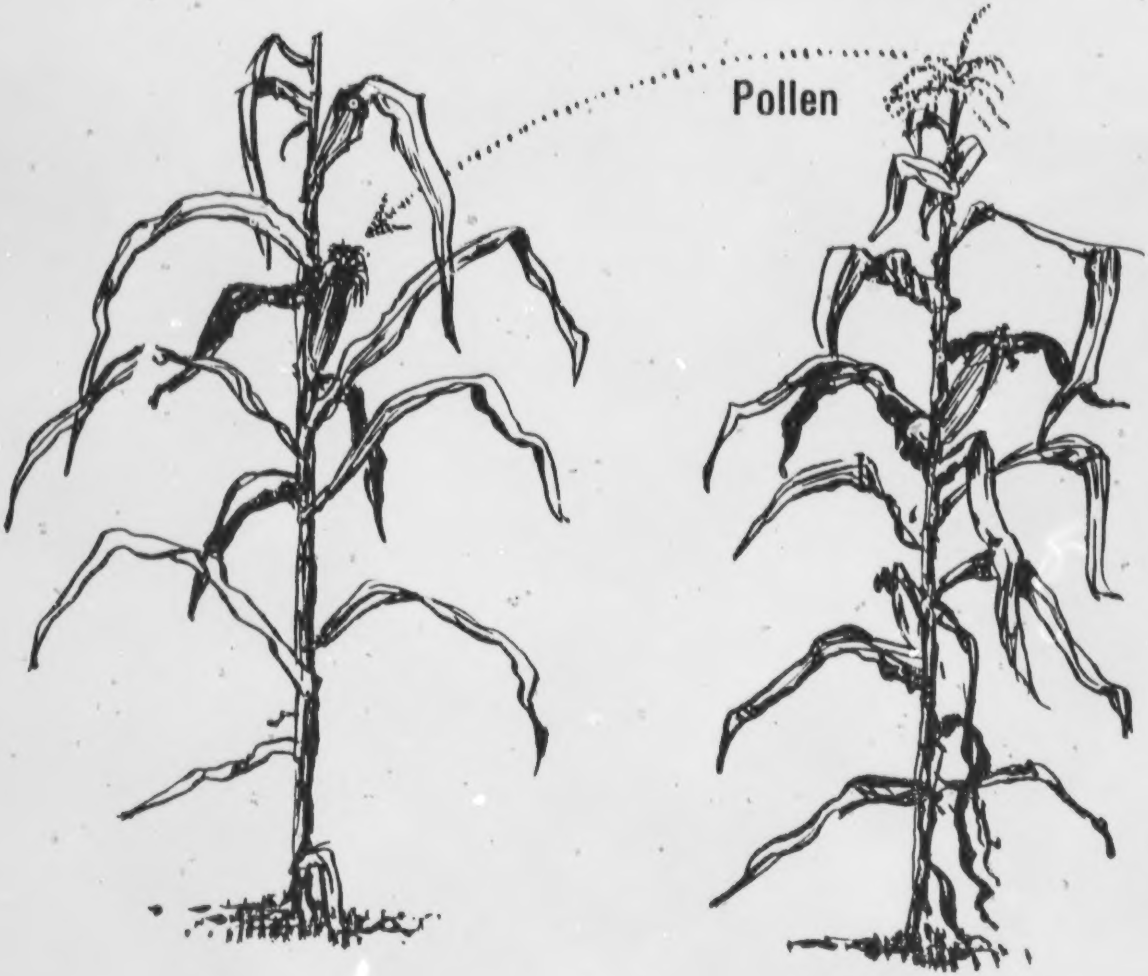

Plumule
Leaf
Secondary or Permanent Root
First Internode
Primary Root
Primary Root System

TM 4,

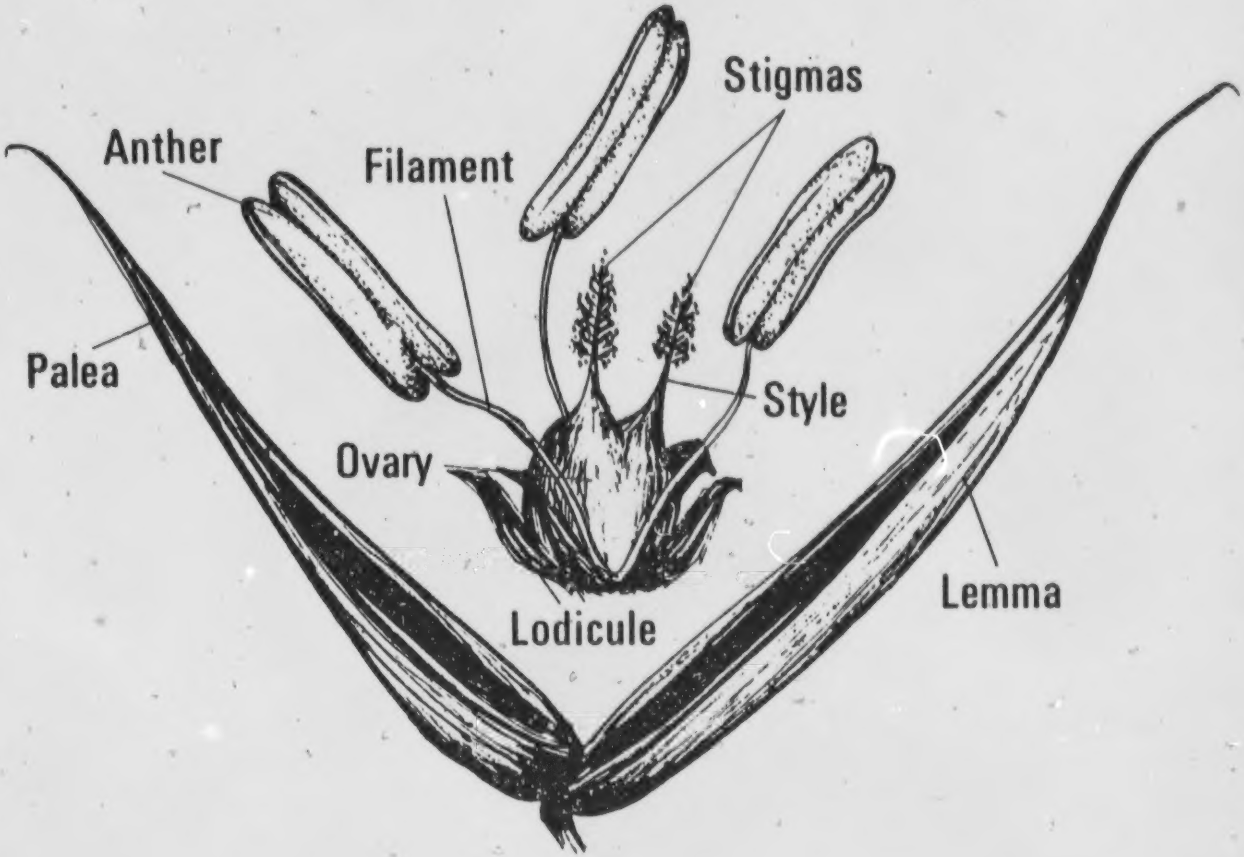
Photosynthesis


CO_2
Sun
Minerals
H_2O

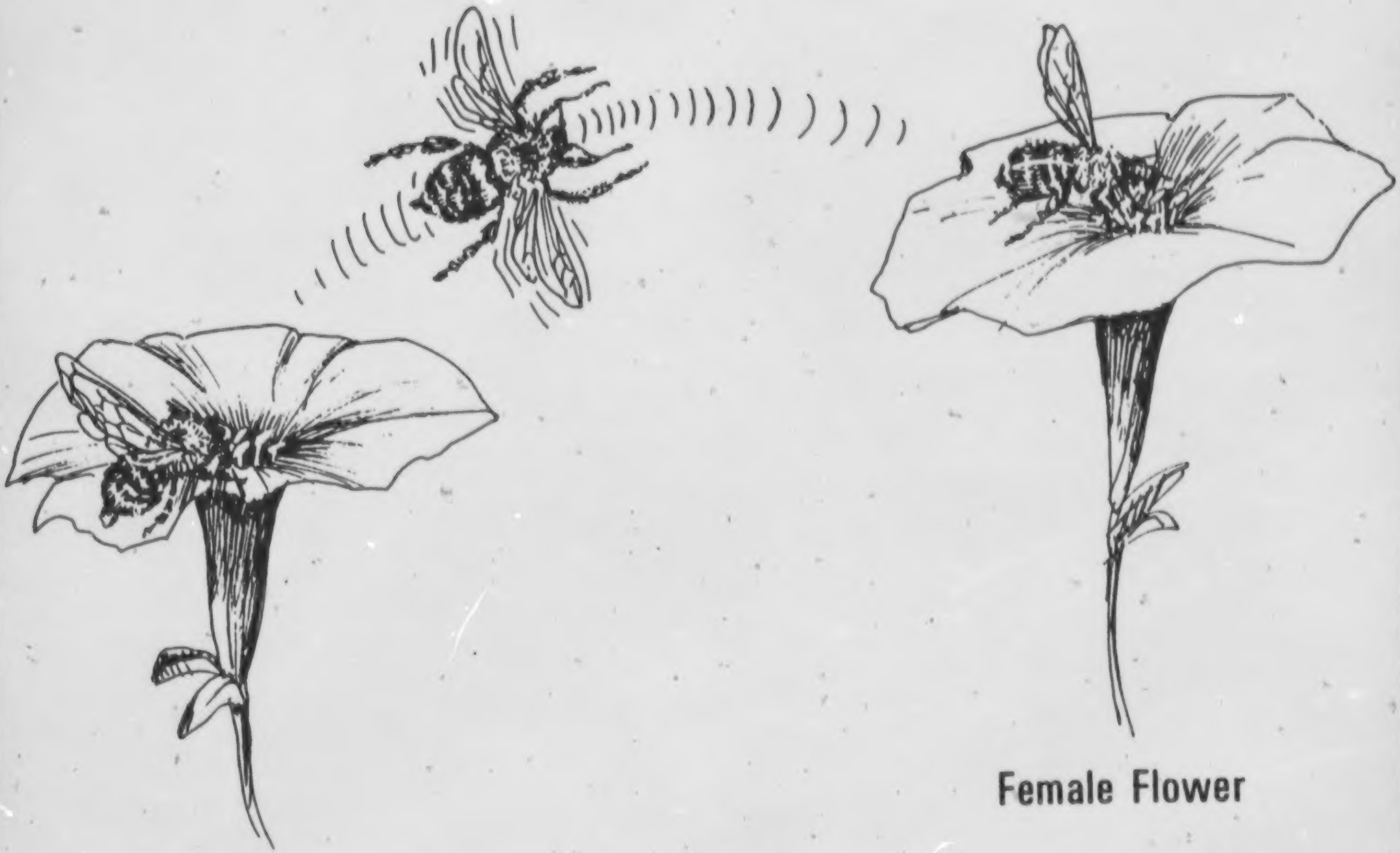
Cross Pollination



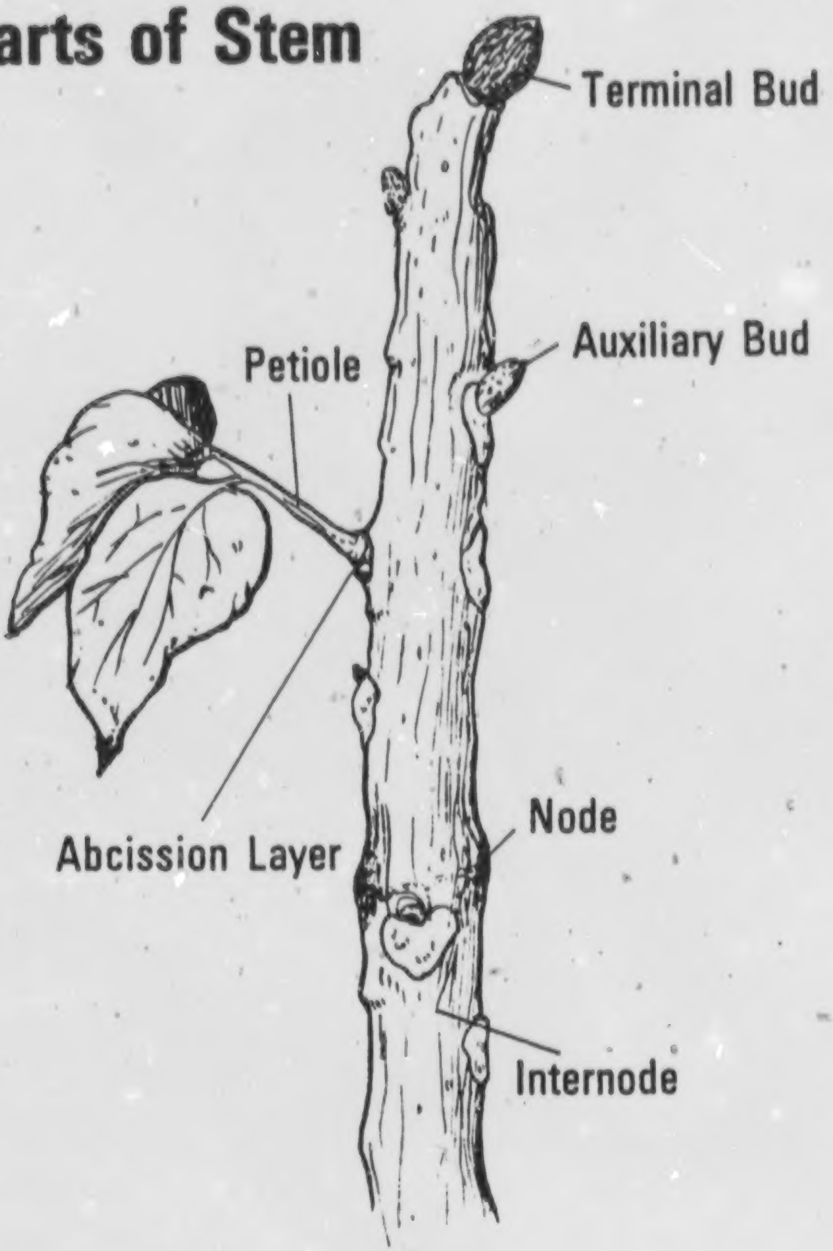
Self-Pollination


Stigmas
Anther
Filament
Palea
Style
Ovary
Lodicule
Lemma

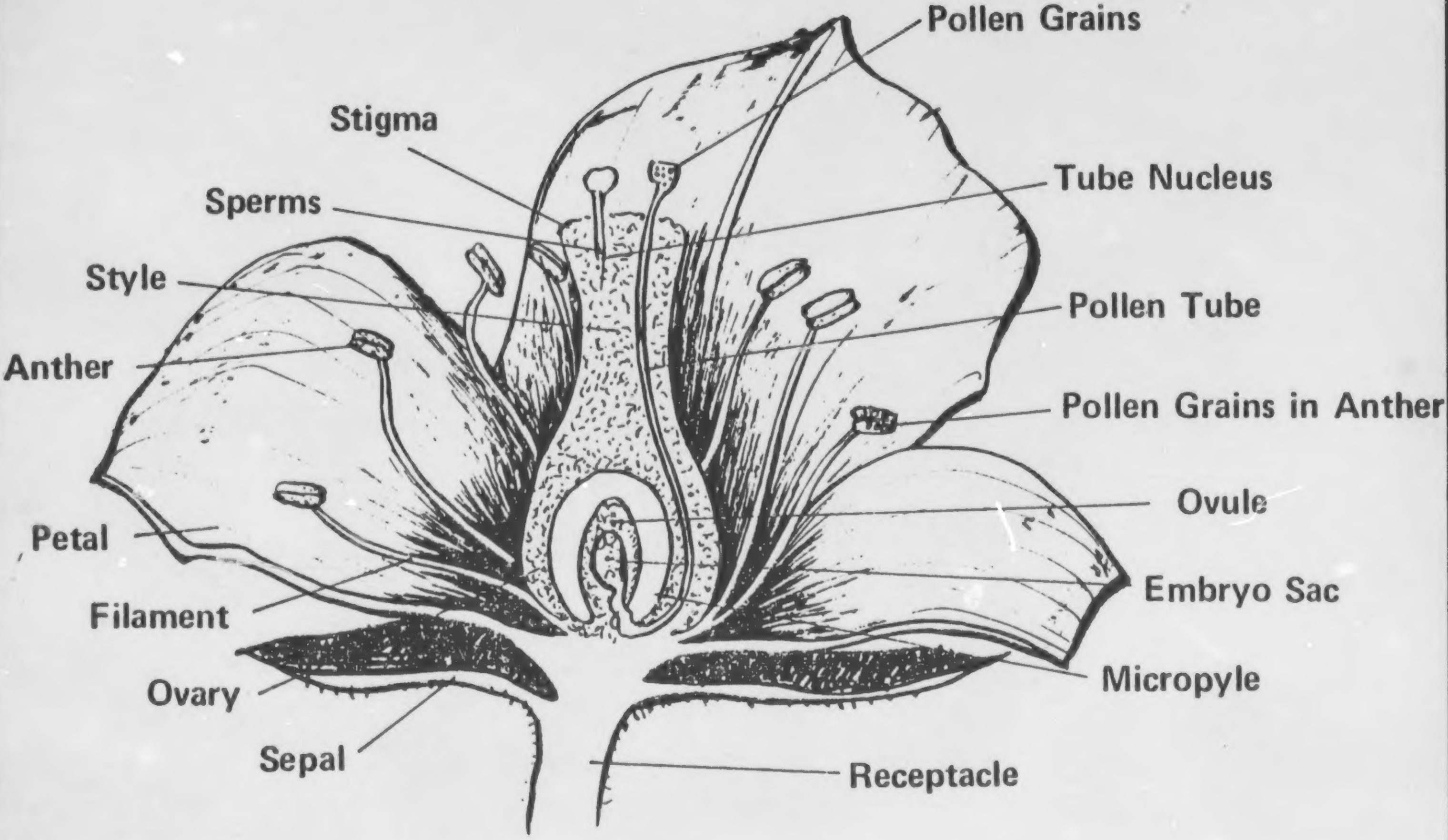
Pollination by Insects


Female Flower
Male Flower

Parts of Stem


Terminal Bud
Auxiliary Bud
Petiole
Abcission Layer
Node
Internode

Parts of a Flower


Pollen Grains
Stigma
Tube Nucleus
Sperms
Style
Pollen Tube
Anther
Pollen Grains in Anther
Ovule
Petal
Embryo Sac
Filament
Micropyle
Ovary
Sepal
Receptacle

Respiration vs. Photosynthesis

A Destruction Process	A Building Process
Food Consumed	Food Manufactured
Energy is Released	Sun Provides Energy
CO_2 Given Off	CO_2 Taken in Plant
Oxygen Used	Oxygen Given Off
Simple Compounds Form	Complex Compounds Form
Produces CO_2 and H_2O	Produces Sugars, Starches
Goes on Day and Night	Requires Light
Carried on in all Cells	Chlorophyll Must be Present

PLANT GROWTH AND REPRODUCTION

TEST

1. Define the following terms:
   a. Pollination -
   b. Respiration -
   c. Dicotyledon -
   d. Pollen -
   e. Pistil -

2. Name the five stages or steps in plant germination.
   a.
   b.
   c.
   d.
   e.

3. What are the three requirements for good seed germination?
   a.
   b.
   c.

4. Name three factors that cause poor seed germination,
   a.
   b.
   c.

5. What three factors are required before photosynthesis can occur?
   a.
   b.
   c.

6. List three ways nutrients enter the plant.
   a.
   b.
   c.

7. Place an "X" beside each term below which is a means of pollen transfer.
   a. _____Temperature
   b. _____Wind
   c. _____Insects
   d. _____Photosynthesis
   e. _____Respiration
   f. _____Gravity

8. Name five methods of vegetative reproduction.
   a.
   b.
   c.
   d.
   e.

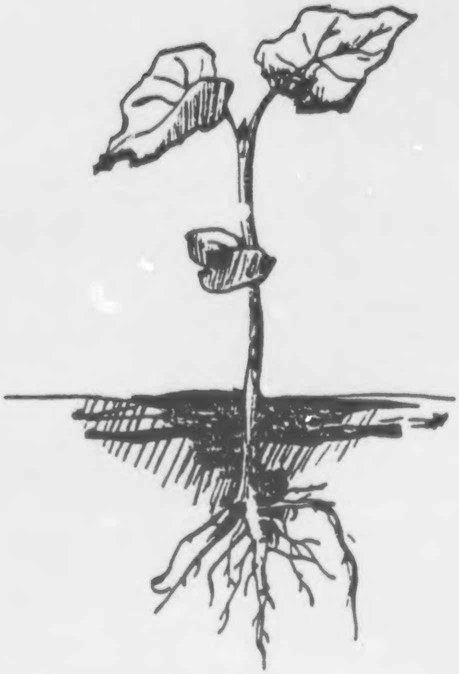
9. Write a short paragraph discussing the difference between photosynthesis and respiration.

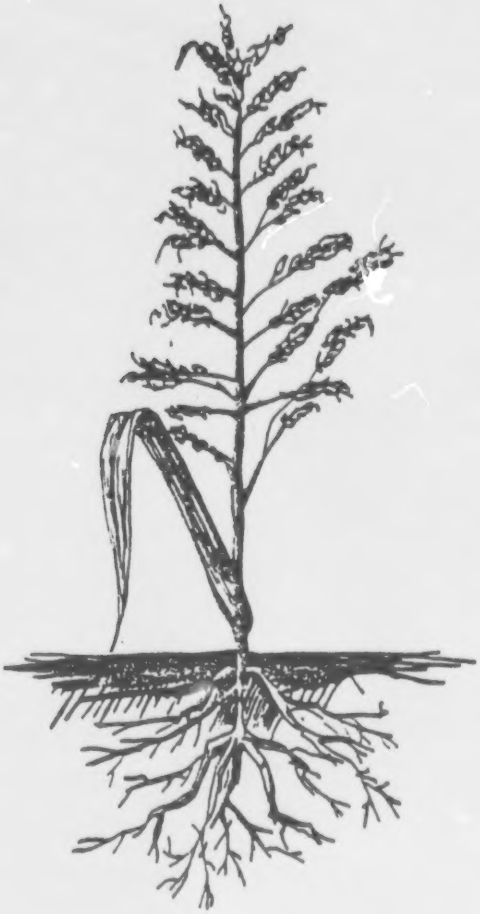
10. List the steps of photosynthesis in relation to plant growth.
    a.
    b.
    c.

11. Name two functions of each plant part.
    a. Roots
       1.
       2.

b. Stems
   1.
   2.
c. Buds or flowers
   1.
   2.
d. Leaves
   1.
   2.

12. Identify the two types of root systems.

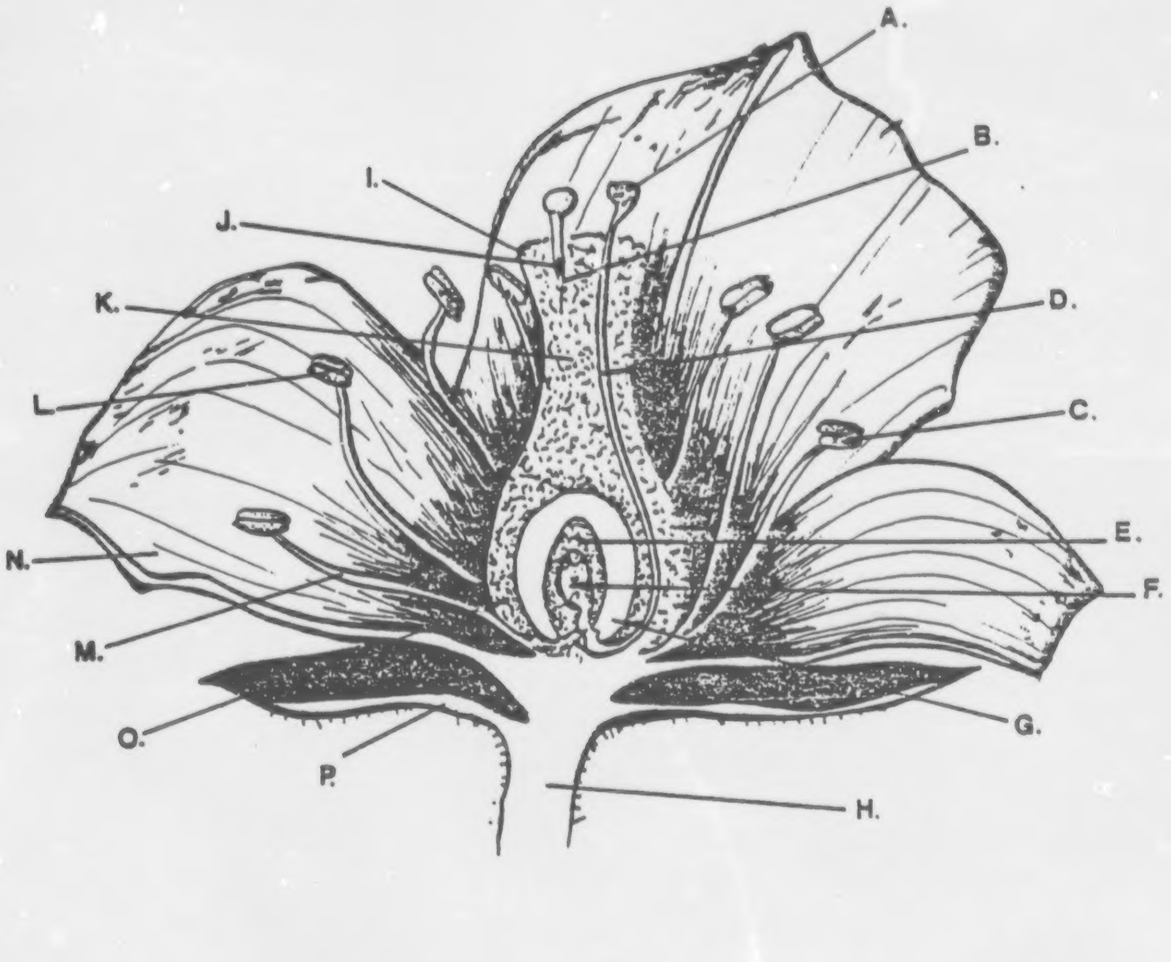




a. ______________________ b. ______________________

13. Identify the parts of this flower.

a. ______________________________
b. ______________________________
c. ______________________________
d. ______________________________
e. ______________________________
f. ______________________________
g. ______________________________
h. ______________________________
i. ______________________________
j. ______________________________
k. ______________________________
l. ______________________________
m. ______________________________
n. ______________________________
o. ______________________________
p. ______________________________


A.
B.
I.
J.
K.
D.
L.
C.
E.
N.
F.
M.
O.
G.
P.
H.

14. Identify the parts of this stem.

a. ______________________________

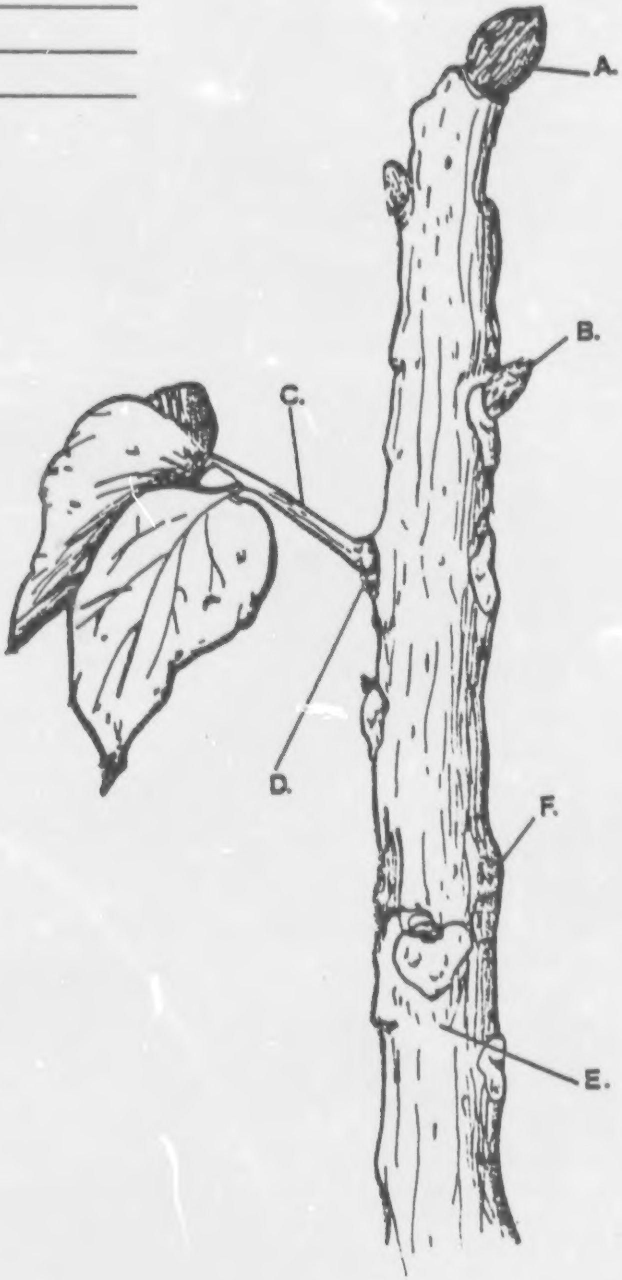
b. ______________________________

c. ______________________________

d. ______________________________

e. ______________________________

f. ______________________________



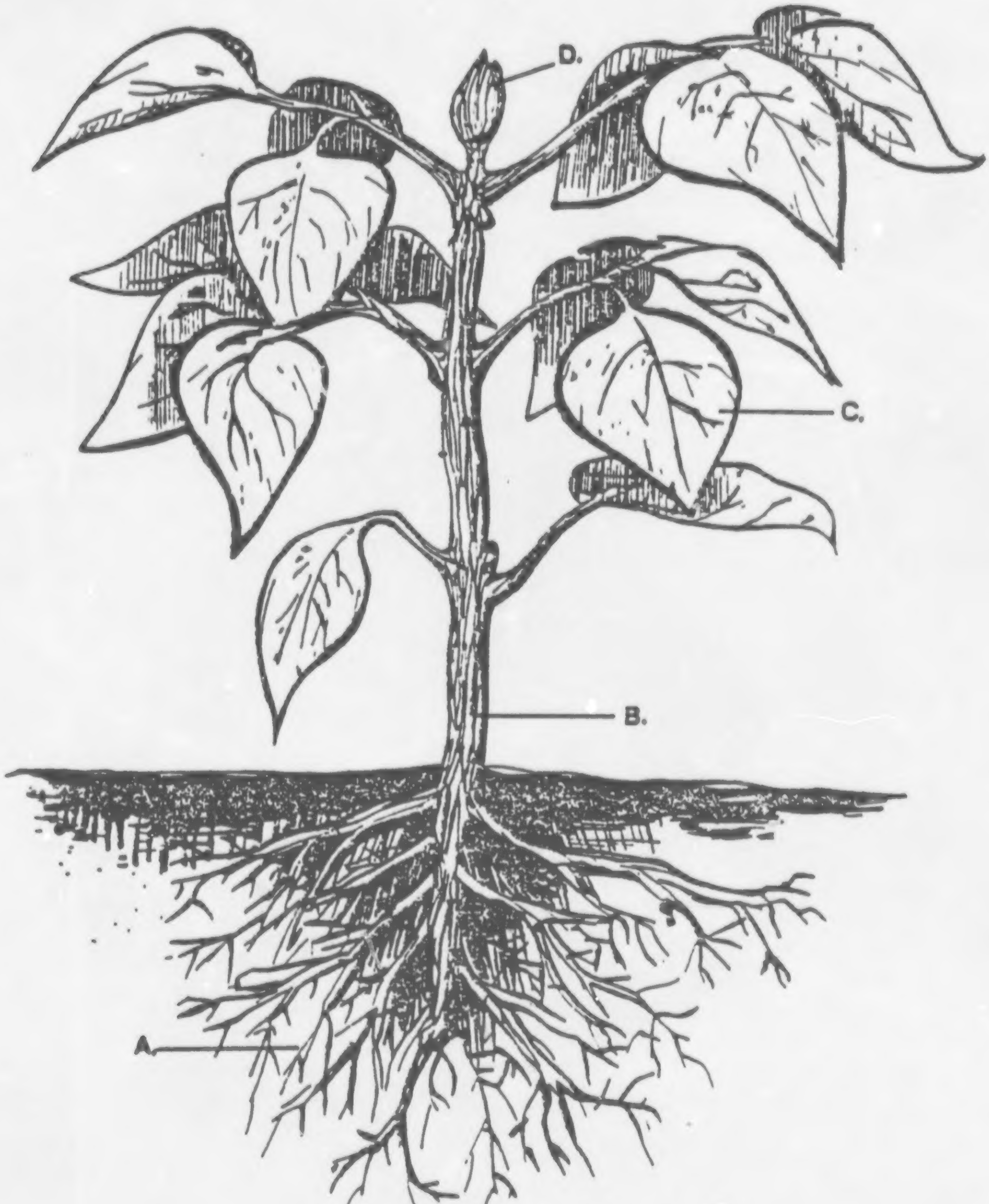
15. Identify the parts of this plant.

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________



PLANT GROWTH AND REPRODUCTION

ANSWERS TO TEST

1. Define:
   - a. Pollination - The transfer of pollen from the anther to stigma
   - b. Respiration - The taking in of oxygen and giving off of carbon dioxide
   - c. Dicotyledon - A plant which produces two seed leaves
   - d. Pollen - The male sex cells produces in the anthers of flowering plants
   - e. Pistil - The seed-bearing organ of a flower composed of the ovary, style and stigma

2. a. Absorption of water and oxygen into the seed
   - b. Seed swells and seed coat ruptures
   - c. Primary (temporary) root goes down
   - d. First internode goes up
   - e. New leaves form and food production starts

3. a. Light
   - b. Temperature
   - c. Moisture

4. Any three of the following:
   - a. Mechanical injury
   - b. Disease
   - c. Storage conditions
   - d. Old seed
   - e. Temperature too cold
   - f. Hard seed coat
   - g. Drying out of seed
   - h. Planting too deep
   - i. Chemical damage
   - j. Immature seed

5. a. Light
   b. Favorable temperature
   c. Living cells containing chlorophyll

6. a. Diffusion
   b. Osmosis
   c. Non-root feeding

7. b
   c
   f

8. a. Tubes
   b. Root
   c. Stolon
   d. Stem
   e. Rhizomes

9. Paragraph should consist of the following statements:
   a. Photosynthesis builds energy
   b. Photosynthesis manufactures food
   c. Photosynthesis gives off oxygen
   d. Photosynthesis produces sugars, starches
   e. Respiration is a destruction process
   f. Respiration uses food
   g. Respiration gives off CO_2

10. a. CO_2 taken in by leaves
    b. H_2O taken in by roots
    c. $CO_2 + H_2O \xrightarrow[\text{Chlorophyll}]{\text{Light}} C_6H_{12}O_6 + O_2$

11. a. Roots - Any two of the following:
       1. Absorb water and minerals
       2. Store food
       3. Anchor plant

b. Stems - Any two of the following:
    1. Support leaves
    2. Aid in manufacturing plant food from leaves
    3. Serve as food storage area

c. Buds or flowers
    1. Reproduction
    2. Store food

d. Leaves - Any two of the following:
    1. Manufacture food
    2. Transpiration occurs
    3. Store food

12. a. Taproot
    b. Fibrous

13. a. Pollen grains
    b. Tube nucleus
    c. Pollen grains in anther
    d. Pollen tube
    e. Ovule
    f. Embryo sac
    g. Micropyle
    h. Receptacle
    i. Stigma
    j. Sperms
    k. Style
    l. Anther
    m. Filament
    n. Petal
    o. Ovary
    p. Sepal

14. a. Terminal bud
    b. Auxiliary bud
    c. Petiole
    d. Abcission layer
    e. Internode
    f. Nodes

15. a. Roots
    b. Stem
    c. Leaf
    d. Bud

LEADERSHIP
(FFA)

ORIENTATION TO VOCATIONAL AGRICULTURE
UNIT I

TERMINAL OBJECTIVES

After completion of this unit, the student should be able to match terms associated with vocational agriculture to the proper definition and discuss the importance of vocational agriculture in his future as well as the opportunities for personal development offered by vocational agriculture and FFA. This knowledge will be evidenced by scoring eighty-five percent on a unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with orientation to vocational agriculture to their correct definition.
2. List three reasons for studying vocational agriculture.
3. List the responsibilities of being a student in vocational agriculture.
4. List four groups of people that vocational agriculture trains and serves.
5. List three activities in which FFA members can participate.
6. Match the proper description and/or activity with the FFA contest.
7. Match the requirements for the various FFA degrees with the degree.
8. List five awards available through FFA awards program.
9. Select from a list types of projects most commonly exhibited at fairs and shows by FFA members.
10. Explain in writing why vocational agriculture is vocational in nature.
11. Prepare a list of the more important agricultural enterprises in your home community.

ORIENTATION TO VOCATIONAL AGRICULTURE
UNIT I

SUGGESTED ACTIVITIES

I. Instructor:

  A. Provide students with objective sheet
  B. Provide students with information sheet
  C. Discuss terminal and specific objectives
  D. Discuss information and assignment sheets
  E. Advise students about due date for applications
  F. Give test

II. Student:

  A. Read objective sheet
  B. Study information sheet and take additional notes
  C. Complete assignment sheet
  D. Take test

INSTRUCTIONAL MATERIALS

I. Included in this unit:

  A. Objectives
  B. Information sheet
  C. Assignment sheet

     Assignment sheet #1 - List of Important Agricultural Enterprises in Community

  D. Test
  E. Answers to test

II. References:

  A. Agriculture is More Than Farming, prepared by the American Association of Teacher Educators in Agriculture, the National Association of Agricultural Education Supervisors, and the National Vocational Agricultural Teacher's Association, Inc., The Future Farmers Supply Service, Alexandria, Virginia.

  B. Stone, Archie A. Agribusiness and Industry. Danville, Illinois: Interstate Printers and Publishers, 1965.

  C. Krebs, Alfred H. Agriculture in Our Lives. Daville, Illinois: Interstate Printers and Publishers, 1972

D. State High School Agricultural and Agricultural Mechanics Contest. annual publication of the State High School Agricultural and Agricultural Mechanics Contest Committee, Agriculture Education Department, Kansas State University, Manhattan, Kansas.

E. Kansas FFA Activities and Awards Opportunities, State Department of Education, Agriculture Education, Topeka, Kansas, 1976.

ORIENTATION TO VOCATIONAL AGRICUTLURE
UNIT I

INFORMATION SHEET

I. Terms and definitions

A. Vocational agriculture - Training program to teach young people about the science of agriculture and/or agricultural related occupations and to prepare them for furthering their education or entry into the world of work

B. Agriculture - Science or art of cultivating the soil, producing crops, raising livestock, and all other aspects created as these products move from producer to consumer

C. Agricultural related occupations (Agribusiness) - Those operating units that support production agriculture in such ways as marketing processing, and servicing

D. Future Farmers of America (FFA) - An organization of national scope for students enrolled in vocational agriculture programs designed to provide training in leadership, citizenship, and cooperation and to compliment the total program

II. Reasons for studying vocational agriculture

A. Importance of national food supply

B. Awareness of nation's economy

C. Daily use of farm products

D. Understanding of agricultural related business

E. Choice of an occupation

F. Wise usage of our natural resources

(NOTE: The nature of today's agriculture requires that students be trained in the sciences dealing with animals, plants, and soils, as well as principles of breeding, feeding, disease, and insect control. In every school, instruction is prepared so that it meets the needs of students. Whatever a student ultimately decides to do, the willingness to accept responsiblity and to make decisions based on what he has learned in vocational agriculture will be valuable to him.)

III. Responsibilities of vocational agriculture students

A. Attend class

B. Carry on a supervised occupational experience program

(NOTE: It is this aspect of vocational agriculture that makes it vocational in nature. By having a farming program or gaining work experience in an agricultural business, students become acquainted with the world of work and begin to recognize the importance of preparing for a vocation.)

C. Become an active member of the Future Farmers of America

D. ________________________________(To be completed by local schools.)

IV. Groups that vocational agriculture trains and serves

A. High school students planning to farm

B. High school students planning to work in agricultural-related occupations

C. Young adults establishing themselves in farming

D. Farmers improving their operations

V. FFA activities

A. FFA meetings

B. Committee work

C. Leadership conferences

D. Contests

E. Livestock shows and fairs

F. State and national conventions

G. Parent-Member banquet

H. Field trips

I. Local, state, and national awards

VI. Contests for the FFA members

A. Livestock Judging - Ability to select animals for breeding and marketing purposes

B. Crops Judging - Ability to identify and judge all types of plants and seeds common to the local community and to Kansas

C. Land Judging - Ability to identify the various types of soils and land classes and make land use recommendations

D. Meats Judging - Ability to select meat cuts and evaluate carcasses

E. Agricultural Newswriting - Ability to perform correct journalism skills

F. Parliamentary Procedure - Ability to conduct an effective and efficient chapter meeting according to the correct rules of parliamentary procedure

G. Public Speaking - Ability to write and deliver speeches

H. FFA Quiz - Ability to answer questions that test one's knowledge of the Future Farmers of America

I. Agricultural Electrification - Ability to identify electrical equipment and perform simple wiring skills

J. Agricultural Structures and Environment - Ability to lay out buildings or structures designed to meet certain specifications

K. Agricultural Mechanic Skills - Ability to identify tools and perform basic Mechanical skills

L. Farm Power and Machinery - Ability to identify parts and perform basic tasks concerning farm machinery

M. Soil and Water Management - Ability to evaluate and understand irrigation systems and conservation practices

N. Dairy Cattle Judging - Ability to select cattle for dairy production

O. Dairy Products Judging - Ability to evaluate dairy products

P. Poultry Judging - Ability to select and evaluate the different classes of poultry including egg production

Q. Entomology - Ability to identify and answer basic questions about different types of insects

R. Horticultural Judging - Ability to identify and judge various classes of horticultural plants

S. Creed Speaking - Ability of freshman to deliver the FFA Creed

VII. FFA degrces that can be earned

A. Greehand Degree

1. Awarded by the local chapter signifying achievement of the first level of membership

2. Qualifications for the degree

a. Be enrolled in vocational agriculture and have plans for a supervised training program in agriculture

b. Be familiar with the aims and purposes of the FFA

c. Recite the FFA Creed

d. Receive a majority vote from the local chapter members

(NOTE: Star Greenhand - Awarded by the local chapter to the most outstanding Greenhand or freshman student.)

B. Chapter Farmer Degree

1. Awarded by the local chapter signifying achievement of the second level of membership

2. Qualifications for the degree

a. Must have received the Greenhand Degree

b. Must have completed one semester of instruction in vocational agriculture

c. Must have earned at least $50 from a supervised training program or worked 50 hours

(NOTE: Chapter Star Farmer and Star Agribusinessman - Awarded at the local level to the most outstanding member in the chapter in his/her training program area; selected from the Chapter Farmers.)

C. State Farmer Degree

1. Awarded to the top 2% of the FFA members in the state each year

2. Qualifications for the degree

a. Must have been in the FFA for at least two years

b. Must have earned at least $500 from a supervised training program or worked 500 hours

c. Must be able to lead a group discussion for at least 40 minutes

d. Must participate in activities above the chapter level

(NOTE: District Star Farmer and Star Agribusinessman - Awarded at the district level to the most outstanding member in leadership, scholarship, and supervised agricultural training program; selected from the State Farmers in that district.)

(NOTE: State Star Farmer and Star Agribusinessman - Awarded to the outstanding FFA member in the state in his/her training program area; must have received the State Farmer Degree.)

D. American Farmer Degree

1. Awarded to the top FFA members in the nation

(NOTE: Only 1 in 1,000 receives the American Farmer Degree approximately.)

2. Qualifications for the degree

a. Must have received the State Farmer Degree

b. Must have been an active FFA member for at least 36 months

c. Must have earned at least $1,000 from a supervised training program

(NOTE: Regional Star Farmer and Star Agribusinessman - Selected from the American Farmers in the four regions from his/her training program area; awarded to four members yearly in the United States.)

(NOTE: Star Farmer and Star Agribusinessman of America:

1. Awarded to the outstanding FFA member in the nation in his/her training program area

2. Must have achieved the American Farmer Degree

3. Awarded annually at the National FFA Convention

4. Qualifications for the award
    a. Must list career goals
    b. Must list and describe skills and/or competencies developed through an occupational experience program
    c. Must describe the managerial responsibilities assumed
    d. Must provide an annual summary of total hours worked each year and/or income received
    e. Must itemize investments and other resources accumulated
    f. Must be recommended by his/her state association

VIII. Awards available on the local, state, and national levels
  A. Individual Foundation Awards
    1. Agricultural Mechanics
    2. Agricultural Electrification
    3. Soil, Water, and Air Management
    4. Crop Production
    5. General Livestock Production
    6. Beef Production
    7. Sheep Production
    8. Swine Production
    9. Dairy Production
    10. Poultry Production
    11. Home Improvement
    12. Ornamental Horticulture
    13. Outdoor Recreation
    14. Fish and Wildlife Management
    15. Forestry Management
    16. Placement in Sales and/or Service
    17. Placement in Agricultural Production
    18. Placement in Processing
    19. FFA Public Speaking
    20. Star State Farmer
    21. Star State Agribusinessman
    22. Star Farmer of America
    23. Star Agribusinessman of America

B. Chapter Foundation Awards
    1. Better Chapter
        a. State Level
            1) Superior Awards
            2) Gold Emblem Awards
        b. National level
            1) Bronze Awards
            2) Silver Awards
            3) Gold Awards
    2. Chapter Safety
        a. State Level - Superior Awards
        b. National Level
            1) Bronze Awards
            2) Silver Awards
            3) Gold Awards
    3. Building Our American Communities
        a. State Level
            1) Bronze Awards
            2) Silver Awards
            3) Gold Awards
        b. National Level
            1) Bronze Awards
            2) Silver Awards
            3) Gold Awards

C. Chapter Improvement Awards
    1. Membership Achievement Awards
    2. State Scrapbook Contest

D. Individual Improvement Awards
    1. Livestock Conservation Awards
    2. Grass and Grain Record Keeping Awards
    3. Kansas Cooperative Council Awards
    4. Wildlife Damage Control
    5. Acres for Wildlife
    6. Kansas Future Farmer Award
    7. National FFA Band and Chorus

- E. Scholarships
    - 1. Santa Fe Railway
    - 2. Roy Freeland, Harry Darby Scholarship
    - 3. Hesston Scholarship
    - 4. Charolois Scholarship
    - 5. Hereford Scholarship
    - 6. Angus Scholarship
    - 7. Alpha Gamma Rho Scholarship

IX. Common projects exhibited at fairs and shows

- A. Market steers
- B. Beef breeding
- C. Market swine
- D. Swine breeding
- E. Market lambs
- F. Sheep breeding
- G. Dairy
- H. Crops exhibits such as seeds or plants
- I. Mechanic exhibits

(NOTE: Students enrolled in vocational agriculture and the FFA have the opportunity to exhibit projects at livestock shows and fairs. Most all types of crops and livestock can be exhibited at the fairs and shows.)

X. Nature of vocational agriculture

- A. Supervised occupational experience programs
    - 1. Actual "hands on" type of experience
    - 2. Real life experiences
    - 3. Learn by doing
- B. Preparing for a vocation

ORIENTATION TO VOCATIONAL AGRICULTURE
UNIT I

ASSIGNMENT SHEET #1 - LIST OF IMPORTANT AGRICULTURAL ENTERPRISES IN COMMUNITY

Prepare a list of the more important agriculture enterprises in your community. (Discuss this with your instructor after the list is complete.)

ORIENTATION TO VOCATIONAL AGRICULTURE
UNIT I

TEST

1. Match terms on the right with their correct definition.

_____a. An organization of national scope for students enrolled in vocational agriculture programs designed to provide training in leadership, citizenship, and cooperation and to compliment the total program

_____b. Those operating units that support production agriculture in such ways as marketing, processing, and servicing

_____c. Science or art of cultivating the soil, producing crops, raising livestock, and all other aspects created as these products move from producer to consumer

_____d. Training program to teach young people about the science of agriculture and/or agricultural related occupations and to prepare them for furthering their education or entry into the world or work

1. Vocational agriculture
2. Agriculture
3. Future Farmers of America
4. Agricultural related occupations (Agribusiness)

2. List three reasons for studying vocational agriculture.

a.

b.

c.

3. List the responsibilities of being a student in vocational agriculture.

a.

b.

c.

d.

4. List four groups of people that vocational agriculture serves and trains.
   a.
   b.
   c.
   d.

5. List three activities in which FFA members can participate.
   a.
   b.
   c.

6. Match the contests on the right with the proper descriptions and/or activities on the left.

_____a. Identifying vegetables
_____b. Land capability classes
_____c. Welding
_____d. Laying out a building
_____e. Wiring
_____f. Evaluating carcasses
_____g. Conducting business
_____h. Insect identification

1. Horticultural judging
2. Livestock Judging
3. Crops Judging
4. Poultry Judging
5. Agricultural Mechanics Contest
6. Parliamentary Procedure
7. Agricultural Electrification
8. Land Judging
9. Agricultural Structures and Environment Contest
10. Dairy Products Judging Contest
11. Entomology Contest
12. Meats Judging Contest

7. Match the degree on the right with its proper set of requirements by placing the letter which represents that degree in the correct blank.

_____a. 1) Awarded by local chapter signifying achievement of the first level of membership

2) Be enrolled in vocational agriculture

G=Greenhand
C=Chapter Farmer
S=State Farmer
A=American Farmer

3) Recite the FFA Creed

4) Be familiar with the aims and purposes of the FFA

5) Receive a majority vote from local chapter members

_____b. 1) Awarded to top FFA members in the nation

2) Must have received the State Farmer Degree

3) Must have been an active FFA member for at least 36 months

4) Must have earned at least $1,000 from a supervised experience program

_____c. 1) Awarded to top 2% of the FFA members in the state each year

2) Must have been in the FFA for at least two years

3) Must have earned at least $500 from a supervised experience program or worked 600 hours

4) Must participate in activities above the chapter level

_____d. 1) Awarded by local chapter signifying achievement of the second level of membership

2) Must have received the degree of Greenhand

3) Must have completed one semester of instruction in vocational agriculture

4) Must have earned at least $50 from a supervised experience program or worked 50 hours

8. List five individual foundation awards available through the FFA awards program.

a.

b.

c.

d.

e.

9. Place an "X" by the projects most commonly exhibited at fairs and shows by FFA members.

_____a. Hot rod car

_____b. Market steers

_____c. Market horses

_____d. Market swine

_____e. Market sheep

_____f. Ewe lambs

_____g. Gilts

_____h. Heifers

_____i. Crops

_____j. Clothing

_____k. Dairy animals

_____l. Plants

_____m. Airplanes

_____n. Mechanics projects

10. Explain in writing why vocational agriculture is vocational in nature.

11. Prepare a list of the more important agricultural enterprises in your community.

(NOTE: If this has not been accomplished prior to the test, ask the instructor when the above activity should be completed.)

ORIENTATION OF VOCATIONAL AGRICULTURE
UNIT I

ANSWERS TO TEST

1. a. 3
   b. 4
   c. 2
   d. 1

2. Any three of the following:
   a. Importance of national food supply
   b. Awareness of nation's economy
   c. Daily use of farm products
   d. Understanding of agricultural related business
   e. Choice of occupation
   f. Wise usage of our natural resources

3. a. Attend classes
   b. Carry on a supervised occupational experience program
   c. Become an active member of the Future Farmers of America
   d. (Local requirements)

4. a. High school students planning to farm
   b. High school students planning to work in agricultural-related occupations
   c. Young adults establishing themselves in farming
   d. Farmers improving their operations

5. Any three of the following:
   a. FFA meetings
   b. Committee work
   c. Leadership conferences
   d. Contests
   e. Livestock shows and fairs
   f. State and national conventions

g. Parent-Member banquets
h. Field trips
i. Local, state, and national awards

6. a. 1
b. 8
c. 5
d. 9
e. 7
f. 12
g. 6
h. 11

7. a. G
b. A
c. S
d. C

8. Any five of the following:
a. Individual Foundation Awards
   1) Agricultural Mechanics
   2) Soil, Water, and Air Management
   3) Dairy Production
   4) Crop Production
   5) Livestock Production
   6) Forestry Management
   7) Poultry Production
   8) Agricultural Electrification
   9) Placement in Sales and/or Services
   10) Fish and Wildlife Management
   11) Placement in Agricultural Production
   12) Placement in Processing
   13) FFA Public Speaking
   14) State Star Farmer
   15) State Star Agribusinessman
   16) Star Farmer of America

    17) Star Agribusinessman of America
    18) Ornamental Horticulture
    19) Beef Production
    20) Swine Production
    21) Sheep Production
    22) Outdoor Recreation
    23) Home Improvement

9. b, d, e, f, g, h, i, k, l, n

10. Explanation should include the following:
    a. Supervised occupational experience programs
        1) Actual "hands on" type of experiences
        2) Real life experiences
        3) Learn by doing
    b. Preparing for a vacation

11. Evaluated to the satisfaction of the instructor.

INTRODUCTION TO THE FUTURE FARMERS OF AMERICA
UNIT I

TERMINAL OBJECTIVES

After completion of this unit, the student should be able to discuss the organization and operation of a local chapter and describe the purposes of the organization. The student should also be able to write a brief history and discuss the requirements for membership. This knowledge will be evidenced by scoring eighty-five percent on a unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Write a short paragraph describing major events in the history of the Future Farmers of America.
2. List the requirements for membership in the FFA.
3. Select from a list the types of membership in the FFA.
4. Name the official FFA colors.
5. Write the FFA motto.
6. Recite the FFA creed.
7. List the five symbols which make up the FFA emblem and the meaning of each.
8. Select from a list of terms the four degrees of active membership.
9. Name the six main offices of the local chapter and one duty of each.
10. Name the officers of the state association.
11. Identify the symbols of the FFA officers' stations.
12. List four essentials of a good chapter.
13. Select from a list the primary aim of the FFA.
14. List four of the specific purposes of FFA.
15. Name the seven FFA districts in Kansas.

INTRODUCTION TO THE FUTURE FARMERS OF AMERICA
UNIT I

SUGGESTED ACTIVITIES

I. Instructor

- A. Provide students with objective sheet
- B. Provide students with information sheet
- C. Make transparencies
- D. Discuss terminal and specific objectives
- E. Discuss information sheet
- F. Provide students with the official FFA manual
- G. Give test

(NOTE: Instructor may want to secure films on "Four Star Farmers" or "Focus on Forty" to show to class. It may also be helpful to have a former FFA member to talk to the class.)

II. Student:

- A. Read objectives
- B. Study information sheet
- C. Recite the creed
- D. Become an active member in local chapter
- E. Take test

INSTRUCTIONAL MATERIALS

I. Included in this unit:

- A. Objectives
- B. Information sheet
- C. Transparency master
  - 1. TM 1 - Symbols of the Officers' Stations
- D. Test
- E. Answers to test

II. References:

A. Vocational Agriculture and the FFA. The Future Farmers of America in cooperation with the Agricultural Education Branch of the Office of Education, Department of Health, Education, and Welfare, Washington, D.C.

B. Official Manual. Alexandria, Virginia: Future Farmers of America, 1973.

C. The Future Farmers of America Organization, What It Is, What It Does. The Future Farmers of America Foundation, Inc., in cooperation with the Division of Vocational and Technical Education, U.S. Office of Education, Washington, D.C.

D. Selland, Larry and Dennis Torrence. Advisors Teaching Guide on the FFA. FFA Fellow, University of Maryland, 1968-1969.

INTORUCTION TO THE FUTURE FARMERS OF AMERICA
UNIT I

INFORMATION SHEET

I. Brief history of the FFA

  A. Organized nationally in 1928 at Kansas City, Missouri

  B. Kansas - the 16th state chartered; chartered in 1929

  C. National convention held each fall at Kansas City, Missouri during the time of the American Royal

  D. Kansas Association FFA State Convention - held each May/June at Kansas State University

  E. State advisory - Mr. Les Olsen

  F. State executive secretary - Mr. Bob Broeckelman

  G. 570,108 members in 8,200 chapters throughout the 50 states and puerto Rico

  H. 7,331 members in 161 Kansas Chapters

  I. Admitted girls into the organization in 1969

  J. Official song - "Hail the FFA"

  K. Seven FFA districts in Kansas - Southeast, East Central, Northeast, North Central, Northwest, South Central, Southwest

  L. State FFA Leadership Camp - held during July at Rock Springs Ranch near Junction City

  M. Leadership - Citizenship Day held during January in Topeka. North District Officers' Leadership Conference held during September/October

II. Requirement for membership

  A. 14-21 years of age

  B. Enrolled in vocational agriculture

  C. Be in good standing with local chapter

  D. (Local requirements)

III. Types of membership in the FFA

  A. Active

  B. Honorary

  C. Alumni

  D. Collegiate

IV. Official FFA colores - National blue and corn gold

V. FFA motto

Learning to do, Doing to learn
Earning to live, Living to serve

VI. The FFA Creed

I believe in the future of farming, with a faith born not of words but of deeds - achievements won by the present and past generations of agriculturists; in the promise of better days through better ways, even as the better things we now enjoy have come to us from the struggles of former years.

I believe that to live and work on a good farm, or to be engaged in other agricultural pursuit, is pleasant as well as challenging; for I know the joys and discomforts of agricultural life and hold an inborn fondness for those associations which, even in hours of discouragment, I cannot deny.

I believe in leadership from ourselves and respect from other. I believe in my own ability to work efficiently and think clearly, with such knowledge and skill as I can secure, and in the ability of progressive agriculturists to serve our own and the public interest in producing and marketing the product of our toil.

I believe in less dependence on begging and more power in bargaining; in the life abundant and enough honest wealth to help make it so - for others as well as myself; in less need for charity and more of it when needed; in being happy myself and playing square with those whose happiness depends upon me.

I believe that rural America can and will hold true to the best traditions of our national life and that I can exert an influence in my home and community which will stand solid for my part in that inspiring task.

The creed was written by E.M. Tiffany, and adopted at the 3rd National Convention of the FFA. Revised at the 38th Convention.

VII. Symbols of the FFA emblem

A. Owl - Symbolic of wisdom and knowledge

B. Plow - Symbolic of labor and tillage of the soil

C. Rising Sun - Symbolic of a new day (era) in agriculture

D. Cross-section of the ear of corn - Symbolic of common agricultural interests

E. American Eagle - Symbolic of the national scope of the organization

VIII. Degrees of active membership

A. Greenhand

B. Chapter Farmer

C. State Farmer

D. American Farmer

IX. Offices of the local chapter and duties

(NOTE: Every chapter should at least have the first seven offices.)

- A. President - Presides over all meetings
- B. Vice-President - Assists president and directs all committee work
- C. Secretary - Keeps minutes of all meetings
- D. Treasurer - Keeps financial records
- E. Reporter - Reports chapter news
- F. Advisor - Advises FFA members on all matters relating to the chapter
- G. Sentinel - Assists president in maintaining order
- H. Historian - Keeps chapter scrapbook
- I. Chaplin - Takes charge of religious exercises during meetings, banquets, or other occasions
- J. Parliamentarian - Informs the members on correct parliamentary procedure

X. State FFA Officers (to be completed by teacher)

- A. President -
- B. Vice-President -
- C. Secretary -
- D. Treasurer -
- E. Reporter
- F. Sentinel
- G. Advisor -
- H. Executive Secretary -

XI. Symbols of FFA officers' stations (Transparency 1)

- A. Rising sun - President
- B. Plow - Vice-President
- C. Ear of corn - Secretary
- D. Bust of Washington - Treasurer
- E. American Flag - Reporter
- F. Shield of Friendship - Sentinel
- G. Owl - Advisor

XII. Essentials of a good chapter

- A. Knowledge of the FFA on the part of every member
- B. Capable officers and leaders
- C. Responsibilities shared by all members in chapter activities

D. A challenging program of activities

E. Adequate financing for chapter activities

F. Proper paraphernalia, equipment and records

G. Well planned, regularly held chapter meetings

H. Support by school officials and community leaders

XIII. Primary aim of FFA - Development of agricultural leadership, cooperation, and citizenship

XIV. Specific purposes of FFA

A. To devlop competent, aggressive, rural, and agricutural leadership

B. To create and nurture a love of country life

C. To strengthen the confidence of students of vocational agriculture in themselves and their work

D. To create more interest in the intelligent choice of agricultural occupations

E. To encourage members to improve the farm home and its surroundings

F. To encourage members in the development of individual farming programs and establishment in agricultural careers

G. To participate in worthy undertakings for the improvement of agriculture

H. To develop character, train for useful citizenship and foster patriotism

I. To participate in cooperative effort

J. To encourage and practice thrift

K. To encourage improvement in scholarship

L. To provide and encourage the development of organized rual recreational activities

XV. Dues (completed by the instructor)

A. National - $__________

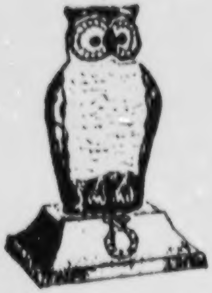
B. State - $__________

C. District - $__________

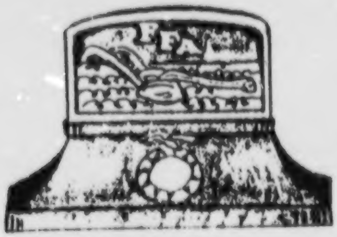
D. Local - $__________

(NOTE: National dues include subscription to the National Future Farmer Magazine and State dues include a subscription to the Kansas Future Farmer Magazine.)

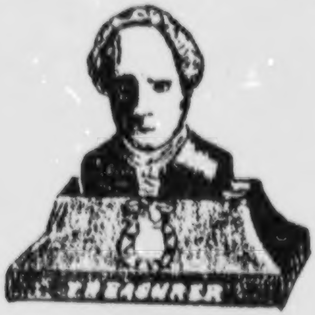
Symbols of Officers' Stations



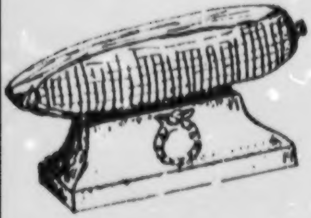
Advisor



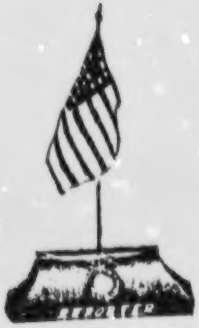
Vice-President



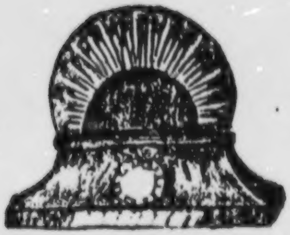
Treasurer



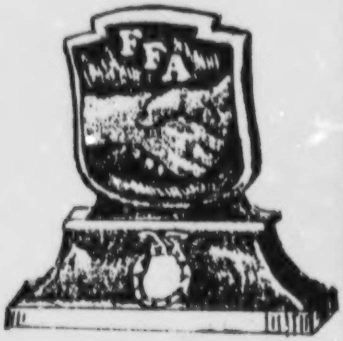
Secretary



Reporter



President



Sentinel

INTRODUCTION TO THE FUTURE FARMERS OF AMERICA
UNIT I

TEST

1. Write a short paragraph describing major events in the history of the Future Farmers of America.

2. List the requirement for membership in the FFA.

   a.

   b.

   c.

   d.

3. Select from the list below the types of membership in the FFA by placing an "X" in the correct blanks.

   _____a. Active
   _____b. Associate
   _____c. Collegiate
   _____d. Inactive
   _____e. Honorary
   _____f. Regular
   _____g. Chapter Farmer
   _____h. Alumni

4. The official FFA colors are ____________________ and ____________________.

5. Write the FFA motto.

6. Recite the FFA creed.

(NOTE: If this activity has not been accomplished prior to the test, as the instructor when it should be completed.)

7. List the five symbols which make up the FFA emblem and the meaning of each.

a.

b.

c.

d.

e.

8. Select from a list of terms below the four degrees of active membership by placing an "X" in the correct blanks.

_____a. Honorary

_____b. Chapter Farmer

_____c. Alumni

_____d. Associate

_____e. Greenhand

_____f. American Farmer

_____g. Regular farmer

_____h. State Farmer

9. Name the seven main officers of the local chapter and one duty of each.

a.

b.

c.

d.

e.

f.

g.

10. Name the following officers of the state association.

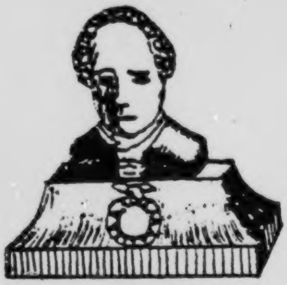
a. President -

b. Secretary -

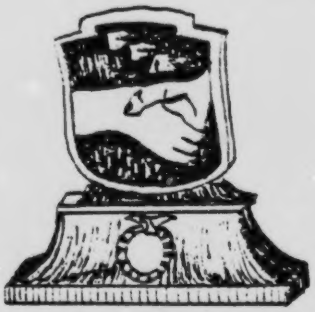
c. Advisory -

d. Reporter -

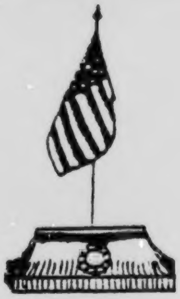
11. Identify the FFA officers' symbols from the following diagrams.



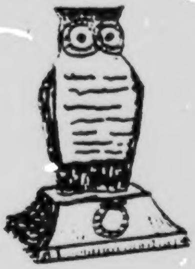
a. ____________________



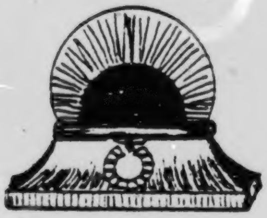
b. ____________________



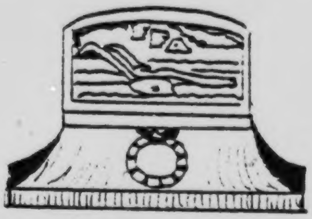
c. ____________________



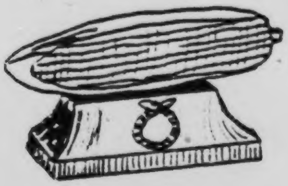
d. ____________________



e. ____________________



f. ____________________



g. ____________________

12. List four essentials of a good chapter.

a.

b.

c.

d.

13. Underline the primary aim of the Future Farmers of America.

a. The development of leadership

b. The maturing of the individual

c. The development of self-confidence

d. The development of agricultural leadership, cooperation, and citizenship

14. List four of the specific purposes of FFA.

a.

b.

c.

d.

15. List the seven FFA districts in Kansas.

a.

b.

c.

d.

e.

f.

g.

INTRODUCTION TO THE FUTURE FARMERS OF AMERICA
UNIT I

ANSWERS TO TEST

1. Description should include most of the following:
   - a. Organized nationally in 1928 at Kansas City, Missouri
   - b. Kansas has number 16 charter
   - c. National convention held at Kansas City in the fall annually at the time of the American Royal
   - d. Kansas State convention held in spring at Kansas State University
   - e. Mr. Les Olsen--State advisor
   - f. Dr. Dan Marrs--State executive secretary
   - g. 500,385 members in 7,838 chapters throughout 50 states and Puerto Rico
   - h. 6,886 members in 152 chapters in Kansas
   - i. Admitted girls into the FFA in 1969
   - j. Official song--"Hail the FFA"
2. a. 14-21 years of age
   - b. Enrolled in vocational agriculture
   - c. Be in good standing with local chapter
   - d. (Local requirements)
3. a, c, e, h
4. National blue, corn gold
5. Learning to do, Doing to learn
   Earning to live, Living to serve
6. This should be completed before test time. Evaluated to the satisfaction of the instructor.
7. a. Owl--Symbolic of knowledge
   - b. Plow--Symbolic of labor and tillage of soil
   - c. Rising sun--Symbolic of a new day (era) in agriculture
   - d. Cross section of ear of corn--Symbolic of common agricultural interests
   - e. American Eagle--Symbolic of the national scope of the organization

8. b, e, f, h

9. a. President--Presides over all meetings
   b. Vice President--Assists president and directs all committee work
   c. Secretary--Keeps minutes of all meetings
   d. Treasurer--Keeps financial records
   e. Reporter--Reports chapter news
   f. Sentinel--Assists president in maintaining order
   g. Advisor--Advises FFA members on all matters relating to the chapter

10. (To be completed by instructor each year)
   a. President--
   b. Secretary--
   c. Advisor--
   d. Reporter--
   e. Executive Secretary--

11. a. Treasurer
   b. Sentinel
   c. Reporter
   d. Advisor
   e. President
   f. Vice-President
   g. Secretary

12. Any four of the following:
   a. Knowledge of the FFA on the part of every member
   b. Capable officers and leaders
   c. Responsibilities shared by all members in chapter activities
   d. Challenging program of activities
   e. Adequate financing for chapter activities
   f. Proper paraphernalia, equipment, and records
   g. Well planned, regularly held chapter meetings
   h. Support by school officials and community leaders

13. d

14. Any four of the following:
    a. To develop competent, aggressive, rural, and agricultural leadership
    b. To create and nurture a love of country life
    c. To strengthen the confidence of students of vocational agriculture in themselves and their work
    d. To create more interest in the intelligent choice of agricultural occupations
    e. To encourage members to improve the farm home and its surroundings
    f. To encourage members in the development of individual farming programs and establishment in agricultural careers
    g. To participate in worthy undertakings for the improvement of agriculture
    h. To develop character, train for useful citizenship, and foster patriotism
    i. To participate in cooperative effort
    j. To encourage and practice thrift
    k. To encourage improvement in scholarship
    l. To provide and encourage the development of organized rural recreational activities

15. a. Northeast
    b. North Central
    c. East Central
    d. Southeast
    e. South Central
    f. Southwest
    g. Northwest

DUTIES AND RESPONSIBILITIES OF FFA MEMBERS
UNIT II

TERMINAL OBJECTIVE

After completion of Unit II, the student should be able to discuss the duties and responsibilities of being an FFA member. He should be able to organize the order of business for a meeting and discuss the areas of the program of activities. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on a unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. List the order of business for an FFA meeting.
2. List six items that constitute a good FFA meeting.
3. Identify the location of the FFA officers' stations during an FFA meeting when given a diagram of the meeting room.
4. List five areas in the program of activities.
5. List the purposes for which committees are formed.
6. Discuss in a paragraph the proper use of the FFA jacket or blazer.
7. List six items in the code of ethics.
8. List five leadership activities that would apply to the FFA chapter and community.
9. List three purposes of the Future Farmer Supply Service as related to the local chapter.
10. Describe two activities in which a local chapter can participate or sponsor during national FFA week.
11. Complete checklist on successful chapter operation.

DUTIES AND RESPONSIBILITIES OF FFA MEMBERS
UNIT II

SUGGESTED ACTIVITIES

I. Instructor:

- A. Provide students with objective sheet.
- B. Provide students with information and assignment sheets.
- C. Make transparency.
- D. Discuss terminal and specific objectives.
- E. Discuss information sheet.
- F. Discuss assignment sheet. Have each student complete the assignment sheet before discussing it with the class and officers.
- G. Give test.

II. Students:

- A. Read objectives.
- B. Study information sheet.
- C. Complete assignment sheet.
- D. Become actively involved in the local chapter's activities.
- E. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

- A. Objective sheets
- B. Information sheet
- C. Transparency master
    - 1. TM 1 - Room Arrangement for FFA Meeting
- D. Assignment sheet
    - 1. Assignment Sheet #1 - Checklist on Successful Chapter Operations
- E. Test
- F. Answers to test

II. References:

A. *Official Manual*. Alexander, Virginia: Future Farmers of America, 1973.

B. Gray, Farrell D. and J.R. Jackson. *Leadership Training and Parliamentary Procedure for FFA*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1958

DUTIES AND RESPONSIBILITIES OF FFA MEMBERS
UNIT II

INFORMATION SHEET

I. Order of business for FFA meetings

  A. Opening ceremony

  B. Minutes of the previous meeting

  C. Orders of the day

  D. Officers' reports

  E. Reports on chapter program of activities

  F. Special features

  G. Unfinished business

  H. Committees' reports

    1. Standing

    2. Special

  I. New business

  J. Degree and installation ceremonies

  (NOTE: Used only when new members are initiated, when Greenhands are raised to the Chapter Farmer degree, or when officers are installed.)

  K. Closing ceremony

  L. Entertainment, recreation, refreshments

II. Items that constitute a good FEA meeting

  A. Effective use of an executive committee to assure careful planning in advance of the meeting time

  B. Starts and closes on time

  C. Proceeds according to an established order of business

  D. Conducted according to accepted parliamentary procedure

  E. Includes well-prepared committees', secretary's and treasurer's reports

  F. Shows that each officer is familiar with his or her duties and responsibilities

  G. Commands the interest and attention of all members

  H. Provides for maximum member participation and develops the cooperative attitude

- I. Includes business, entertainment features, and refreshments
- J. Moves along with "snap" thus preventing monotony and the wasting of time
- K. Proceeds with a minimum of active participation by the Advisor

III. Location of FFA officers' stations in the meeting room (Transparency 1)

IV. Areas covered in program of activities

- A. Supervised agricultural occupations experience
- B. Cooperation
- C. Community service
- D. Leadership
- E. Earnings, savings, and investments
- F. Conduct of meetings
- G. Scholarship
- H. Recreation
- I. Public relations
- J. State and national activities
- K. Alumni Relations

(NOTE: Chapter executive committee should appoint each person to a committee on the program of activities.)

V. Purposes for which committees are formed

- A. To reach chapter goals
    - 1. Superior chapter award
    - 2. Gold emblem chapter award
    - 3. National chapter award
        - a. Bronze emblem chapter
        - b. Silver emblem chapter
        - c. Gold emblem chapter
- B. To accomplish specific work assignments
- C. To deal with specific problems
- D. To research and make recommendations about new areas of interest

VI. Proper wear of FFA jacket or blazer

- A. The jacket or blazer should only be worn by persons who are members of the organization

B. It should be kept clean and neat at all times

C. The jacket should have only a large emblem on the back and a small emblem on the front; the name of the State Association and the name of the local chapter on the back; and the name of the individual and one office or honor on the front

D. For the most attractive appearance, the jacket should be worn on official occasions with the zipper fastened to the top. The collar should be turned down and cuffs in place and buttoned

E. The jacket or blazer should be worn by officers and members on all official FFA occasions, as well as other occasions where the chapter is represented. It may be worn to school and other appropriate places

F. The jacket or blazer should only be worn to places that are appropriate for members to visit

G. The jacket should be worn by contestants in the National Public Speaking Contest, and at other occasions when FFA members are receiving FFA awards

H. School letters and insignia of other organizations should not be attached to or worn on the jacket

I. The jacket or blazer should not be worn with garments bearing the insignia of other organizations

J. When the jacket becomes too faded and worn to wear in public it should be discarded or the emblems and lettering should be removed

K. The emblem and lettering should be removed if the jacket or blazer is given or sold to a non-member

L. A member always acts like a lady or gentleman when wearing the jacket or blazer

M. Members should refrain from smoking while wearing the FFA jacket or blazer or when officially representing the organization

N. All chapter degree, officer, and award medals should be worn beneath the name on the right side of the jacket, with the exception that a single State Farmer charm and American Farmer key should be worn above the name or attached to a standard key chain. No more than three medals should be worn on the jacket; these should represent the highest degree earned, the highest office held, and highest award earned by the member

VII. Code of ethics for FFA members

A. Dress neatly and appropriately for the occasion

B. Show respect for the rights of others and be courteous at all times

C. Be honest and do not take unfair advantage of others

D. Respect property of others

E. Refrain from loud, boisterous talk, swearing, and horseplay

F. Demonstrate sportsmanship in the show ring, judging contests, and meetings

G. Attend meetings promptly and respect the opinions of others in discussion

H. Take pride in the FFA organization, activities, farming programs, exhibits, and in the occupation of farming and ranching

I. Share with others experiences and knowledge gained by attending national and state meetings

VIII. Leadership activities

A. Provide special training for newly elected officers

B. Elect auxiliary officers

C. Conduct chapter public speaking contest

D. Provide experience in parliamentary procedure

E. Provide experience in conducting meetings

F. Participate in a chapter leadership training school

G. Send members to state and district conventions and/or activities

H. Encourage sending president to FFA National Leadership Conference

I. Provide committee work

(NOTE: Each member should be assigned to a standing committee.)

J. Assist members to apply for the higher degrees

K. Encourage participation in school activities that involve leadership

L. Encourage participation in community activities

IX. Purposes of Future Farmer Supply Service

A. Supplies all official FFA merchandise

B. Insures uniformity in official FFA merchandise

C. Provides high-quality official merchandise

X. National FFA Week activities

A. Radio and TV programs

B. FFA Week articles in newspapers

C. School assembly

D. Civic club program

E. Parent and son banquet

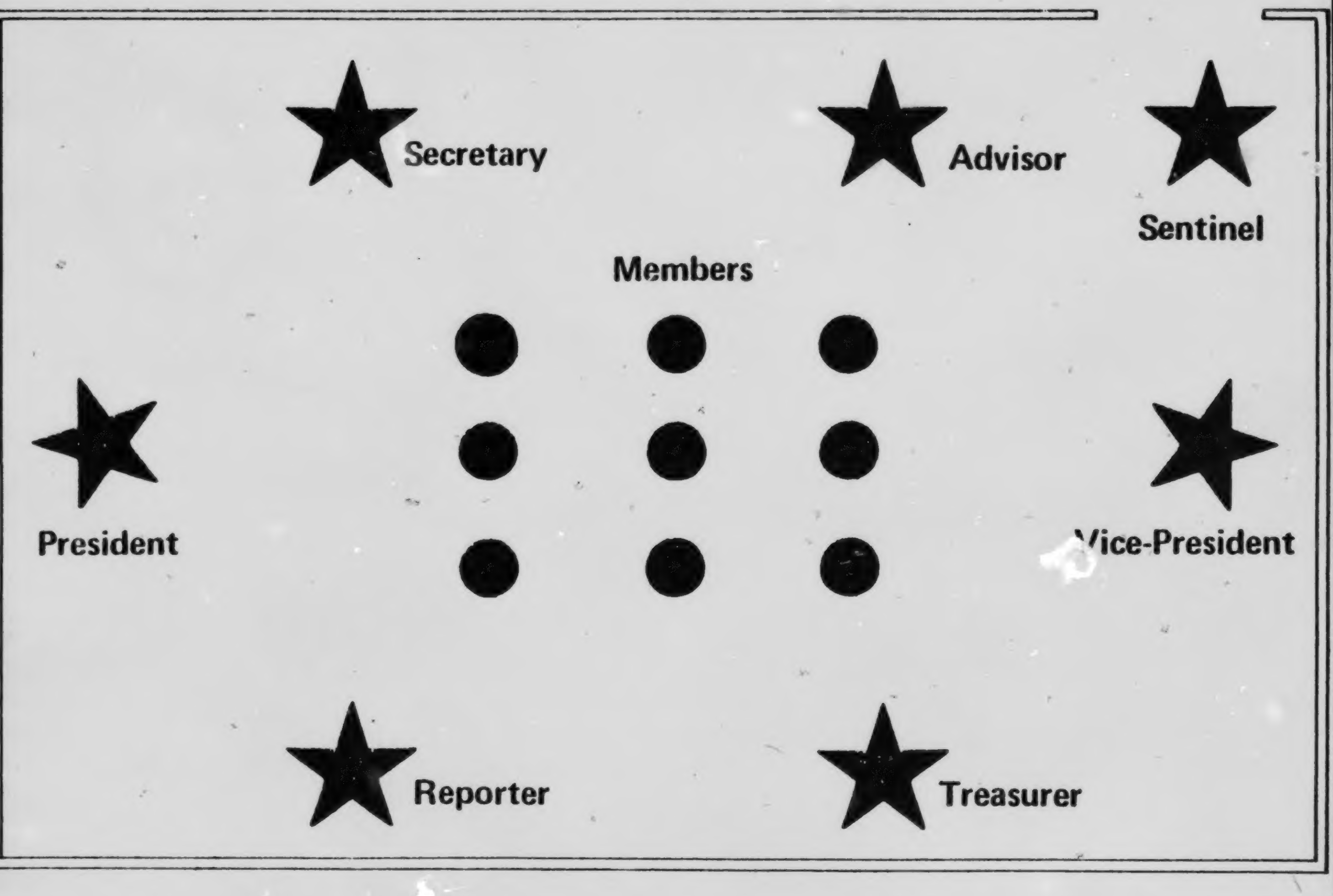
F. Posters displayed around town

G. Attend church as a group

H. Window displays

I. Others that the chapter approves

Room Arrangement for FFA Meeting


Secretary
Advisor
Sentinel
Members
President
Vice-President
Reporter
Treasurer

DUTIES AND RESPONSIBILITIES OF FFA MEMBERS
UNIT II

ASSIGNMENT SHEET #1 - Checklist on Successful Chapter Operations

Each member should complete the checklist evaluating chapter cooperation. Answer each question yes or no.

_____1. Are the officers selected through a nominating committee on the basis of special qualifications?________Do they meet frequently to plan work and receive assistance?

_____2. Are school authorities and others concerned consulted and kept informed on the activities of the chapter?

_____3. Does the chapter have a written program of activities formulated by the members?_______Was last year's program completed?

_____4. Is there a committee functioning on each division of the present program of activities?

_____5. Does the chapter have a written budget based primarily on the program of activities and a sound plan developed for securing the necessary funds with which to operate?

_____6. Is the expenditure of chapter funds properly safeguarded?

_____7. Do a high percentage of members get experience in the work of the chapter and do they have definite responsibilities that contribute to its success or failure?

_____8. Does the chapter possess the standard meeting equipment and is it properly mounted and protected?

_____9. Has a satisfactory system of chapter records and reports been developed?

____10. Is at least one planned meeting held each month when sufficient time is available to take care of all chapter business?_______ Is the program for each chapter meeting posted in advance? _______ Is accepted parliamentary procedure followed?

____11. Does the chapter name an executive committee with power to act for the chapter when necessary?

____12. Do all of the students enrolled in vocational agriculture belong to the chapter? Are qualified members advanced systematically to higher degrees of membership?

____13. Does the chapter have over ninety percent of its members in attendance at regular meetings?

____14. Do a high percentage of members know what they should about FFA? ________Is systematic, continuous leadership training given to all members starting with them as Greenhands?

DUTIES AND RESPONSIBILITIES OF FFA MEMBERS
UNIT II

TEST

1. List the order of business for a FFA meeting.

   a.
   b.
   c.
   d.
   e.
   f.
   g.
   h.
   i.
   j.
   k.
   l.

2. List six items that constitute a good FFA meeting.

   a.
   b.
   c.
   d.
   e.
   f.

3. Identify the location of the FFA officers' stations for FFA meeting by stating the correct office in the blanks provided.

   a.______________________________

   b.______________________________

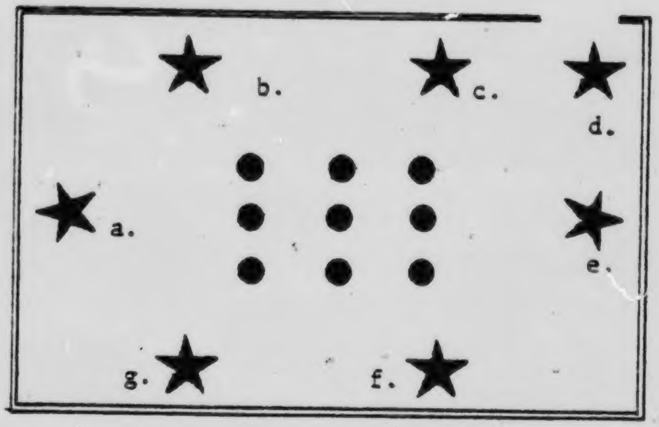
   c.______________________________

d.__________________________

e.__________________________

f.__________________________

g.__________________________



4. List five areas of the program of activities.
   a.
   b.
   c.
   d.
   e.

5. List the purposes for which committees are formed.
   a.
   b.
   c.
   d.

6. Discuss in a short paragraph the proper use of the FFA jacket or blazer.

7. List six items in the code of ethics.

   a.

   b.

   c.

   d.

   e.

   f.

8. List five leadership activities that would apply to the FFA chapter and community.

   a.

   b.

   c.

   d.

   e.

9. List three purposes of the Future Farmers Supply Service as related to the local chapter.

   a.

   b.

   c.

10. Describe briefly two activities that a local chapter can participate or sponsor during National FFA Week.

    a.

    b.

11. Complete checklist on successful chapter operation

(NOTE: If this has not been accomplished prior to the test, ask the instructor when the above activity should be completed.)

DUTIES AND RESPONSIBILITIES OF FFA MEMBERS
UNIT II

ANSWERS TO TEST

1. a. Opening ceremony
   b. Minutes of previous meeting
   c. Orders of the day
   d. Officers' reports
   e. Reports on chapter program of activities
   f. Special features
   g. Unfinished business
   h. Committees' reports
   i. New business
   j. Degree and installation ceremonies
   k. Closing ceremony
   l. Entertainment, recreation, refreshments

2. Any six of the following
   a. Effective use of an executive committee to assure careful planning in advance of the meeting time
   b. Starts and closes on time
   c. Proceeds according to an established order of business
   d. Conducted according to accepted parliamentary procedure
   e. Includes well-prepared committees', secretary's, and treasurer's reports
   f. Shows that each officer is familiar with his or her duties and responsibilities
   g. Commands the interest and attention of all members
   h. Provides for maximum member participation and develops the cooperative attitude
   i. Includes business, entertainment features, and refreshments
   j. Moves along with "snap" thus preventing monotony and the wasting of time
   k. Proceeds with a minimum of active participation by the Advisor

3. a. President
   b. Secretary
   c. Advisor
   d. Sentinel
   e. Vice-President
   f. Treasurer
   g. Reporter

4. Any five of the following
   a. Supervised agricultural occupations experience
   b. Cooperation
   c. Community service
   d. Leadership
   e. Earnings, savings, and investments
   f. Conduct of meetings
   g. Scholarship
   h. Recreation
   i. Public relations
   j. State and national activities
   k. Alumni relations

5. a. To reach chapter goals
   b. To accomplish specific work assignments
   c. To deal with specific problems
   d. To research and make recommendations about new areas of interest

6. Discussion should include some of the following
   a. The jacket or blazer should only be worn by persons who are members of the organization
   b. It should be kept clean and neat at all times
   c. The jacket should have only a large emblem on the back and a small emblem on the front; the name of the State Association and the name of the local chapter on the back; and the name of the individual and one office or honor on the front
   d. For the most attractive appearance, the jacket should be worn on official occasions with the zipper fastened to the top. The collar should be turned down and the cuffs in place and buttoned.

e. The jacket or blazer should be worn by officers and members on all official FFA occasions, as well as other occasions where the chapter is represented. It may be worn to school and other appropriate places

f. The jacket or blazer should only be worn to places that are appropriate for members to visit

g. The jacket should be worn by contestants in the National Public Speaking Contest, and at other occasions when FFA members are receiving FFA awards

h. School letters and insignia of other organizations should not be attached to or worn on the jacket

i. The jacket or blazer should not be worn with garments bearing the insignia of other organizations

j. When the jacket becomes too faded and worn to wear in public, it should be discarded or the emblems and lettering should be removed

k. The emblems and lettering should be removed if the jacket or blazer is given or sold to a non-member

l. A member always acts like a lady or gentleman when wearing the jacket or blazer

m. Members should refrain from smoking while wearing the FFA jacket or blazer or officially representing the organization

n. All chapter degree, officer, and award medals should be worn beneath the name on the right side of the jacket, with the exception that a single State Farmer charm and American Farmer key should be worn above the name or attached to a standard key chain. No more than three medals should be worn on the jacket; these should represent the highest degree earned, the highest office held, and the highest award earned by the member

7. Any six of the following

a. Dress neatly and appropriately for the occasion

b. Show respect for the rights of others and be courteous at all times

c. Be honest and do not take unfair advantage of others

d. Respect property of others

e. Refrain from loud, boisterous talk, swearing, and horseplay

f. Demonstrate sportsmanship in the show ring, judging contests, and meetings

g. Attend meetings promptly and respect the opinions of others in discussion

h. Take pride in the FFA organization, activities, farming programs, exhibits, and in the occupation of farming and ranching

i. Share with others experiences and knowledge gained by attending national and state meetings

8. Any five of the following
    a. Provide special training for newly elected officers
    b. Elect auxiliary officers
    c. Conduct chapter public speaking contest
    d. Provide experience in parliamentary procedure
    e. Provide experience in conducting meetings
    f. Participate in a chapter leadership training school
    g. Send members to state and district conventions and/or activities
    h. Encourage sending president to FFA National Leadership Conference
    i. Provide committee work
    j. Assist members to apply for the higher degrees
    k. Encourage participation in school activities that involve leadership
    l. Encourage participation in community activities

9. a. Supplies all official FFA merchandise
    b. Insures uniformity in official FFA merchandise
    c. Provides high-quality official merchandise

10. Description should include any two of the following
    a. Radio and TV programs
    b. FFA Week articles in newspapers
    c. School assembly
    d. Civic club program
    e. Parent and son banquet
    f. Posters displayed around town
    g. Attend church as a group
    h. Window displays
    i. Others that the chapter approves

11. Evaluated to the satisfaction of the instructor

DEVELOPING THE FFA PROGRAM OF ACTIVITIES
UNIT I

TERMINAL OBJECTIVES

After completion of Unit I, the student should be able to define terms associated with a program of activities, select the major divisions of the FFA program, and match the chapter activities with the proper division. He should be able to list the parts that are included in a program of activities form and select factors that contribute to a satisfactory program of activities. This knowledge will be evidenced by scoring eighty-five percent on a unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Define terms associated with the FFA program of activities.
2. Select from a list the benefits of having a well planned program of activities.
3. Select from a list the major divisions of the FFA program of activities.
4. List the parts that a program of activities form should contain.
5. Select the factors that contribute to a satisfactory program of activities.
6. Select from a list the steps to follow in constructing and conducting a program of activities.
7. Match the chapter activity with the proper divisions within the program of activities.
8. Develop a FFA program of activities.

DEVELOPING THE FFA PROGRAM OF ACTIVITIES
UNIT I

SUGGESTED ACTIVITIES

Instructor:

1. Provide students with objective sheet
2. Provide students with information and assignment sheets
3. Discuss terminal and specific objectives
4. Discuss information and assignment sheets
5. Give test

Students:

1. Read objectives
2. Study informaiton sheet
3. Complete assignment sheet
4. Take test

INSTRUCTIONAL MATERIALS

Included in this unit:

1. Objectives
2. Information sheet
3. Assignment sheet
    - #1--Develop a FFA Program of Activities
4. Test
5. Answers to test

References:

1. Official FFA Manual for the National Organization for Students of Vocational Agriculture. Alexandria, Virginia, 1975.

2. FFA Activity Handbook, 1974-75; National FFA Supply Service, P.O., Box 15159; Alexandria, Virginia 22309.

3. National FFA Organinzation. Chapter Guide to FFA Activities 1974-75, National FFA Supply Service; P.O., Box 15159; Alexandria, Va. 22309.

4. Advisor Handbook, National FFA Supply Service; P.O. Box 15159; Alexandria, Va. 22309.

DEVELOPING THE FFA PROGRAM OF ACTIVITIES
UNIT I

INFORMATION SHEET

I. Terms and definitions

   A. Program of activities--Outline of activities covering a definite period which includes specific goals, ways and means of reaching these goals, and provisions for checking on the accomplishments

   B. Executive committee--Committee made up of chapter officers and the chairman

      (NOTE: In smaller chapters the officers usually make up the executive committee.)

   C. Sub-committee--Members other than the chairman that make up a committee within the program of activities.

      (NOTE: Sub-committee members should be chosen according to their interests.)

II. Benefits of a well planned program of activities

   A. Include goals that serve as a means of directing the chapter activities in a positive manner

   B. Provide school administration and community with a better understanding of the local chapter

   C. Provide opportunity for members to use and develop skills taught in vocational agriculture

   D. Point out the vital part FFA has in a vocational agriculture department

   E. Necessary for proper chapter recognition on the local, state, and national level

   F. Represent the combined thinking of a majority of the members and involves every member

III. Major divisions of the FFA program

   A. Supervised agricultural occupations experience

   B. Cooperation

   C. Community service

   D. Leadership

   E. Earnings, savings, and investments

   F. Conduct of meetings

   G. Scholarship

   H. Recreation

   I. Public relations

   J. Participation in state and national activities

   K. Alumni relations

IV. Parts of a program of activities form

   A. Division of the program of activities

   B. Activities to be participated in under the division

   C. Names of the committee members who will be responsible for each activity

   D. Goals to be accomplished under each activity

   E. Ways and means of reaching each goal

   F. Accomplishment information upon the completion of each goal

V. Factors that contribute to a satisfactory program of activities

   A. Sufficient time given to evaluate, plan, and organize chapter activities

   B. Final program of activities are planned early in school year

   C. Resource personnel used in program planning and evaluation

   D. Challenging and practical goals selected and based upon interest and needs of the members, school, and community

   E. A well developed, realistic, and workable ways and means

   F. Committee organization and membership cooperation

   G. Adequate financing provided for all activities

   H. All members realize it is their program and are involved

   I. Review of the calendar of activities with the school administrator

   J. Program of activities displayed on a wall chart or each member has a copy

VI. Steps in constructing and conducting a program of activities

  A. Have continuous and periodic evaluation of the chapter activities

  B. Have executive committee, under the guidance of the advisor, appoint the program of activities committees

  C. Choose subcommittee members according to their interests insofar as possible

  D. Encourage vice-president to meet with each committee to assist them in formulating their phase of the program of activities

  E. From copies of the programs of activities of the state association and the national organization, select and list items to be included in the chapter program

  F. Secure copies of other chapter programs and get ideas on other suitable program ideas

  G. Have the committees on program of activities report back regularly to the chapter

  H. Instruct the vice-president to keep information on committee progress and to make regular reports to both the president and advisor

  I. Direct the reporter to record the chapter accomplishments on the program of actiivites wall chart or on a regular activity report form

VII. Chapter activities included in each major division

  A. Supervised agricultural occupations experience

    1. Chapter sponsors activities that increase the scope of the supervised occupational experience programs of the members

    Examples:

      a. During the summer before entering the vocational agriculture program, have a meeting with the parents, students, and advisors to discuss a supervised occupational experience program

      b. Explain the value of record keeping to parents and students

      c. Visit programs of outstanding members and former members such as State Farmers and American Farmers

      d. Provide a chapter loan program and invite a loan association representative or other knowledgeable person to discuss loans

e. Show films of agricultural subjects; some good sources for agriculture of FFA films are: The Venard Organization, Peoria, Illinois 61611; Modern Talking Pictures Service, 1212 Avenue of the Americas, New York, New York 10035; and Farm Film Foundation, 1425 H Street, N.W., Washington, D.C. 20005

f. Conduct tours of leading commercial operations that relate to the agricultural industry

g. Maintain a chapter bulletin board with a list of available jobs as determined by surveys and newspaper help wanted ads

h. Contact local employment agencies and other agricultural agencies to locate work experiences for the members

i. Arrange for urban students to have a place for projects such as school farm, greenhouse, or others

j. Establish a rental system whereby students rent production space (4 x 12 foot plot for horticulture or one acre plots for school farm); set a yearly or monthly rental fee to give students experience in rental and bookkeeping; student is responsible for everything in his plot

k. Establish supplementary programs such as beekeeping, fish farming, rabbits, and others

2. Conducts activities which improve the quality of the supervised occupational experience programs of its members

Examples:

a. Establish livestock chains

b. Provide the opportunity for junior membership in breed associations

c. Provide informaiton concerning the use of artificial insemination

d. Participate in shows, fairs, and livestock contests

e. Establish a rent-lease agreement for agricultural equipment

f. Conduct demonstration plot and animal experiments

3. Members conduct activities that promote plant and/or animal loss prevention

   Examples:

   a. Show film on the use of proper sanitaiton practices--Some good sources are United States Steel; your State Health Department; and Breed Associations

   b. Sponsor pesticide safety program--Some sources for materials are all major agricultural chemical companies, U.S. Food and Drug Administration, and U.S. Department of Agriculture

      (NOTE: See FFA Safety Handbook for other sources and mailing addresses.)

   c. Have veterinarian explain disease prevention and parasite control of livestock

   d. Have Soil Conservaiton representative explain the proper use of chemicals on crops

   e. Conduct gain and weight contests

   f. Assist other agricultural agencies with animal health programs

   g. Provide recommendations in harvesting, grading, storage, and marketing of crops

   h. Conduct fertilizer and cultural demonstrations

4. Chapter conducts activities to improve agricultural mechanics occupational experiences of members

   Examples:

   a. Conduct tractor driving and maintenance contests

   b. Sponsor mechanical skills contest

   c. Make shop facilities available to members on a regularly scheduled basis

   d. Attend agricultural machinery demonstrations

   e. Arrange for students to receive work experience in agricultural mechanics by setting up working arrangements with local implement dealers

   f. Arrange for local implement dealers to provide knocked down equipment to be assembled by agricultural mechanics class

5. Chapter recognizes outstanding supervised agricultural occupations experience programs

   Examples:

   a. Establish "Grain Club"; trophies are presented to the top two producers in the club

   b. Provide shop project awards

   c. Participate in Soil Conservation Essay Contest

   d. Post progress charts on project supervision

   e. Post pictures of outstanding project enterprises

   f. Provide proficiency awards from national organization

B. Cooperation

1. Chapter sponsors cooperative purchasing and/or sales activities

   Examples:

   a. Combine member crop and livestock purchases to obtain financial savings through bulk rate prices

   b. Patronize and increase member involvement in local cooperatives

   c. Establish a record keeping cooperative and/or assist members in joining record keeping cooperative

   d. Establish and maintain a "Chapter Exchange" bulletin board with a current listing of items for sale or wanted

   e. Establish a community cooperative by selling supplies to local farmers at wholesale price

   f. Establish and operate a Junior Production Credit Association

2. Chapter provides agricultural services for members

   Examples:

   a. Establish a cooperative; draw up a constitution and by-laws, have participating chapter members serve as the board of directors, hire a member as the manager, sell shares on the basis of hours worked, declare dividends, and in general operate as a cooperative business; chapters have established cooperatives in several areas including:

      1) Chapter farm
      3) Crop
      2) Livestock
      4) Horticulture

5. Chapter cooperates with other organizations and agencies in the community

    a. Arrange for a chapter or class visit to a local or state cooperative facility

    b. Test new crop practices on demonstration plots in cooperation with farm supply, extension, and university specialists

    c. Sponsor a harvest festival, rodeo, tractor pull, or other special event in cooperation with local civic clubs

    d. Assist the local soil conservation district in conservation demonstrations with chapter members serving as junior supervisors

    e. Participate in crop and/or livestock improvement association activities

    f. Assist the local wildlife conservation officials in sponsoring a hunter safety program

    g. Assist the local machinery dealer with machinery assembly and testing

    h. Help local Red Cross with activities such as swimming safety, first aid, and blood collection drives

    i. Construct and operate a booth at the local festival or fair

    j. Assist area officials with senior citizen housing project

    k. Operate an official weather station in cooperation with the land grant college or the U.S. Weather Bureau

    l. Work with other organizations for Community Clean-Up Day

    m. Work closely with the FFA Alumni in providing scholarships, sponsoring fairs or shows, obtaining money for members to attend State and/or National Conventions, and other activities

    n. Participate in local, county, and state fairs: chapter and individual exhibits, fairgrounds preparation, and other activities

6. Chapter sponsors at least one activity to promote a better understanding between residents within service area of school

    Examples:

    a. Establish a Mother's Booster Club to assist with appropriate chapter activities such as suppers, banquets and concessions

b. Sponsor an all-school judging contest involving all students and faculty members

c. Prepare pork, chicken, sweet corn, beef or other agricultural products for special community events

d. Sponsor an annual farmers' institute or similar promotional event as part of the local adult and young farmer educational program

e. Conduct a conservation tour for groups of all ages, and use chapter members as guides

f. Provide effort and funds to complete needed school projects such as concession stand, equipment, or landscaping

g. Assist school administration with new student and freshman orientation

h. Provide members for parking cars at all school events

i. Provide for needs of deserving families such as fuel, food, or money

j. Contribute to worthwhile charities

k. Prepare Christmas decorations for the local community

l. Sponsor community field days in cooperation with extension and university officials

m. Maintain a "For Sale" and "Wanted" bulletin board in community

n. Establish demonstration plots in cooperation with seed, chemical and fertilizer companies

7. Chapter cooperates with other FFA chapters in conducting at least one activity

Examples:

a. Sponsor a livestock garden or shop project show

b. Conduct Greenhand and/or Chapter Farmer initiation with local area chapters

c. Arrange for stopover visits of members enroute to various FFA Events

d. Combine actions of area chapters in promoting National FFA Week

e. Exchange chapter members with other chapters

C. Community Services

1. Chapter sponsors or assists with an agricultural show

Examples:

a. Sponsor a school fair, community fair, garden show, or livestock show

b. Assist in sponsoring a community fair, home and garden show, livestock show, or youth fair, by providing publicity, department superintendent, setting up pens, offering facilities, or securing sponsors

c. Help construct and/or repair facilities for local and/or county fair and similar events

2. Chapter presents educational programs before community and community organizations

Examples:

a. Develop Children's Barnyard or Old MacDonald's Farm at local or county fair

b. Set up displays and have demonstrations at local shopping centers, businesses, civic, agricultural, and/or youth organizations

c. Provide information on jobs and new and improved agricultural practices by means of meetings, leaflets, bulletins, and cooperation with extension service

d. Participate in Farm-City Week activities by providing publicity, welcome farms and displays, farm guides and other services

e. Present speeches, demonstrations, panels, and/or slide series to community organizations explaining:

1) Agriculture

2) The importance of agriculture

3) The activities of your FFA chapter

4) The activities of outstanding chapter members

3. Chapter assists charitable organizations and campaigns

Examples:

a. Conduct charity drives and donate money to : e.g. Heart Funds, Cancer, Christian Rural Overseas Program, March of Dimes, United Givers Fund, Red Cross, and others

b. Help needy families, disabled citizens, and/or senior citizens by performing chores, and supplying financial assistance

c. Help crippled children and/or retarded children by donating toys, tape recorders, or other needed equipment; or by helping with recreation and other activities

d. Donate FFA pens and pencils and other materials to hospitals for use by shut-ins

e. Sing Christmas carols at county home and/or nursing home

f. Decorate nursing home or county home during Halloween and other special celebrations during the year

g. Organize community service projects in cooperation with local churches

h. Sell seeds, plants, etc., and donate the proceeds to crippled children

i. Raise plants in school greenhouse and give to hospital patients and shut-ins in the community

4. Chapter conducts a community safety program

Examples:

a. Conduct a community safety program on agricultural machinery, electrical wiring, chemicals, and other potential community hazards

b. Conduct a school for the safe operation and maintenance of tractors and equipment

c. Conduct a safe tractor driving contest

d. Sponsor a dog clinic for vaccinations

e. Sponsor a pest control and extermination contest

f. Conduct a bicycle safety program

g. Have a "buckle up for safety" seat belt day

(NOTE: Get a bank to provide quarters. Give everyone a quarter who arrives in school parking lot with seat belt fastened.)

5. Chapter conducts activities that help conserve the natural resources or improve the environment

   Examples:

   a. Clean up the community by painting buildings, tearing down old buildings, removing junk autos, mowing vacant lots and sweeping the sidewalks with commercial vacuum sweeper

   b. Sponsor and/or co-sponsor with other organizations community ecology programs such as recycling of paper and bottles and cleaning up streams and parks

   c. Make community survey to determine need for a park and identify the community resources

   d. Participate in community park construction

   e. Secure state game and fish commissions assistance in demonstrating hunter safety, water safety, and wildlife protection

   f. Landscape homes for citizens in the community

   g. Construct, paint, and repair picnic tables for city park

   h. Conserve water and soil by constructing waterways, contours terraces, windbreaks, and using cover crops

   i. Collect water samples for purity testing and soil for analysis testing

   j. Repair tombstones for cemetery

6. Chapter assists school with a major activity, such as landscaping, and beautification campaigns

   Examples:

   a. Beautify school by seeding and fertilizing the lawns, constructing patio areas, constructing concrete seats for outdoor use, landscaping school area, and renovating football field and stadium

   b. Sponsor Arbor Day programs at elementary schools and have students plant trees furnished by the FFA

   c. Develop a portable barnyard and take baby animals to elementary and/or deaf and blind schools

   d. Serve refreshments for such groups as Honor Society, PTA, teachers' association, and others

7. Other suggested chapter activities

Examples:

a. Assist civic organizations in putting on July 4th celebrations by parking cars, supplying equipment and materials, assembling booths, and other similar activities

b. Erect church and civic club signs at edge of town

c. Develop a community products and/or occupations promotional brochure to show what the community has to offer

d. Organize a "career-at-home night" for high school students

e. Remove junked automobiles and roadside trash piles

f. Landscape and beautify community streets and public buildings

g. Organize a community emergency medical service

(NOTE: For a further list of community service ideas, see the BOAC chapter action guide.)

D. Leadership

1. Chapter provides members with leadership experience in public speaking

Examples:

a. Require all vocational agriculture students to write a speech and present it to the class

b. Video tape member's speech and replay for constructive criticism

c. Select members from each class to present speeches at other area chapter's meetings

d. Select local chapter public speaking winner to participate above chapter level

e. Present FFA Foundation recognition awards to class participants and local winner

f. Present speeches to local service clubs, radio, and others

g. Invite speech teacher, advisory committee members, and others to help judge speeches

h. Require all new members to participate in creed, extemporaneous, junior public speaking, or similar speaking contests

2. Chapter provides members with training in parliamentary law and experience in conducting meetings

   Examples:

   a. Provide parliamentary procedure training to all vocational agriculture students through instruction and participation in parliamentary law activities

   b. Conduct parliamentary procedure demonstration to other clubs and classes

   c. Select team members and enter parliamentary procedure contest above the chapter level

   d. Secure books for chapter library on parliamentary procedure and officer training

   e. Conduct regular meetings according to accepted parliamentary procedure

3. Chapter provides training for officers and members

   Examples:

   a. Hold mock meetings in class to provide training in leadership and parliamentary procedure for all students; draw situations at random for class to act on

   b. Elect junior, greenhand, or class officers to operate some of the regular meetings

   c. Participate in chapter, district, state, and national leadership training schools, conferences, or similar activities

   d. Provide financial assistance to members attending leadership training camp schools, conferences, or similar activities

   e. Invite State and National Officers to visit chapter contact State Office or the National FFA Center, Box 15160, Alexandria, Virginia 22309

   f. Provide officer leadership training program for other school organizations

   g. Schedule a visit with officers of other community organizations for officer training

   h. Participate and/or observe FFA executive meeting

4. Chapter assigns responsibilities for each member in the program of activities

   Examples:

   a. Appoint all members to a program of activiites committee at start of school year

   b. Select a committee chairman

   c. Select goals for the program of activities using the National Chapter Award Program application, previous chapter programs of activities, programs of activities, programs from other chapters, and the Official FFA Manual

   d. Write a program of activities during class time with assistance from other members

   e. Present written program of activities to president or vice president for approval

   f. Report committee accomplishments at each chapter meeting

   g. Schedule regular meetings of program of activities committees

   h. Post committee reports, activities, and accomplishments in the classroom

   i. Summarize year's activities and report to state for chapter and member recognition

5. Chapter members meet leadership requirements for advanced degrees

   Examples:

   a. Secure degree and award requirement materials for members

   b. Test member's knowledge of FFA and parliamentary procedure through FFA quizzes, parliamentary procedure demonstrations, and other similar activities

   c. Check application for requirements

   d. Have members fill out or update a state farmer application each year, keep leadership accomplishments up to date, and familiarize members with other advanced awards and degrees

6. Chapter point system for achievement

   a. Set up point system committee to select items for which points are to be awarded

(NOTE: This would include attendance at meetings, participation in leadership activities, participation in community service, speeches, and other activities.)

b. Use point system to select chapter Star Greenhand, Star Chapter Farmer, Leadership Award winner, and DeKalb Award winner

c. Have each student keep a record of points earned each quarter or semester

d. Require members to keep point system in student notebook and/or chapter file

e. Points earned may be applied to:

1) Purchase of FFA supplies

2) Eligibility for chapter trip

3) Student's grade

4) Award plaque or certificate

E. Earnings, savings, and investments

1. Chapter earns money during the year to adequately support its activities

Examples:

a. Commission selling projects

1) Secure sponsors for FFA Calendar program

2) Sell citrus fruit during Christmas season

3) Maintain a gilt chain for chapter members

4) Sponsor a local turkey shoot

5) Have an ice cream social

6) Sell pine seedlings for reforestation

7) Have apple butter or cider sale during the fall

8) Sell rat poison

9) Sell slow moving vehicle signs

10) Sponsor a school or community rodeo

11) Sell Christmas cards

12) Sell hand tool sets

13) Have a community scrap iron drive

14) Invest in U.S. Savings Bonds

15) Conduct FFA raffle

16) Receive premium money from livestock shows

17) Hold magazine sales

18) Put on donkey basketball games

19) Organize a chapter cooperative with the chapter owning some shares

b. Production selling projects

1) Hold Christmas tree sales

2) Sell flowers and vegetable plants from chapter greenhouse projects (coordinate with local growers)

3) Operate a school nursery for classroom work and community sales

4) Sell hog troughs that were constructed in shop classes

5) Fix up used farm equipment and resell

6) Raise popcorn, dry down, package, and sell

7) Sell livestock, dairy, and poultry products

c. Cooperative selling projects

1) Sell fire extinguishers

2) Sell tickets to amateur show

3) Sell tickets to community barbecue

4) Sell certified seed potatoes

5) Put on a pancake and sausage supper

6) Put on an oyster feed

7) Sponsor a horse show

8) Sponsor wood cutting bee or contest

d. Selling a service to others

   1) Run concession stand during sports activities

   2) Obtain a dealership for seed corn

   3) Operate an equipment rental service

   4) Auction members for a day's labor

   5) Run a chapter land laboratory and produce crops for experience and profit

   6) Provide landscape service to area home owners

   7) Sponsor a car wash

2. Chapter investments to broaden the scope of chapter activities

   Examples:

   a. Provide loans to younger members

   b. Purchase chapter equipment

   c. Buy U.S. Savings Bonds

   d. Purchase shares in local cooperative

   e. Purchase land for chapter

   f. Maintain livestock chain

   g. Provide speakers for chapter activities

   h. Finance leadership training

   i. Provide a chapter scholarship for a graduating senior

   j. Donate money to State and/or National FFA Foundation

3. Chapter conducts activities to encourage savings and stimulate investments among members

   Examples:

   a. Use official record books and materials

   b. Prepare yearly budget and submit to chapter

   c. Maintain treasurer's book and audit monthly

    d. Recognize members who practice thrift

    e. Provide board of education with copy of budget and net worth statement

    f. Have representatives from a commercial bank, Production Credit Association, Farmers Home Administration, Federal Land Bank, and agribusinessmen speak on proper credit procedures

F. Conduct of meetings

1. Chapter uses appropriate official cermonies

   Examples:

   a. Use official ceremonies as written in the FFA manual

   b. Have officers memorize their parts in ceremonies

2. Chapter maintains a current file of FFA materials

   Examples:

   a. Establish a filing system that can be understood by members

   b. Assign responsibility for maintaining the file to the chapter secretary or other designated member

   c. Post a file index guide near the cabinet

   d. Review materials annually and replace outdated data

3. Chapter uses recommended procedures in keeping chapter records

   Examples:

   a. Use official secretary and treasurer books

   b. Provide at least simulated experience in financial record keeping for the treasurer

   c. Provide an "officer's office" or other suitable place for keeping chapter records

   d. Require secretary to have the meeting minutes up to date

   e. Submit treasurer's book to auditing committee

4. Arrange to have a regularly scheduled meeting time

   Examples:

a. Prepare meeting time and dates on school calendar with approval of school administrators

b. Notify in advance all teachers who may be inconvenienced by the absence of students during FFA meetings

c. Schedule FFA evening meetings when possible

d. Hold at least one meeting each month at a regularyly scheduled time

e. Start on time and establish a definite time limit for meeting

f. Send a "we missed you at the last meeting" postcard to the home of each member not present for scheduled meeting or activity

g. Provide a copy of meeting agenda to the school administration

h. Assign a chapter member to be responsible for maintaining the official scrapbook

5. Invite an FFA officer above the chapter level to visit the chapter

Examples:

a. Arrange to conduct an FFA meeting while the officer is present

b. Introduce the officer to school personnel and businessmen in the community

c. Have officer speak to the chapter officers on the role of an FFA officer or other suitable topics

d. Take the officer to visit member's homes

e. Have officer participate in shcool assemblies, chapter banquet, and/or other similar activities

6. Use nominating committee in election of officers

Examples:

a. Use graduating senior officers and/or graduating seniors as committee members

b. Include representatives from freshman, sophmore, junior, and senior classes on the committee

7. Chapter encourages graduates to retain their active FFA membership

Examples:

a. Send a self-addressed, stamped envelope, and an invitation for membership to graduates

b. Pay part of all of the graduate's membership dues

c. Notify graduate members of FFA meetings with a postcard or phone call

8. Other suggestions

Examples:

a. Recognize members with perfect attendance at meetings

b. Hold orientation meeting for prospective members

c. Invite parents to attend at least one regular meeting

d. Elect a chaplain and have devotions at each meeting

e. Elect officers for the coming year before the end of the current school term

f. Keep chapter official paraphernalia displayed in chapter meeting room

g. Provide each member with an agenda prior to the meeting

h. Schedule a meeting of the executive committee to plan agenda

i. Establish FFA "Buddy System"; upperclassmen arrange for transportation of young member to meeting, introduce new members to chapter officers, and assist new members with their projects

k. Hold executive committee meetings at a local restaurant, or member's or advisor's home, with chapter picking up the tab

l. Arrange a retreat for the executive committee

G. Scholarship

1. Chapter sponsors activities to encourage scholarship among the members

Examples:

a. Require members running for chapter offices to have at least a "C" average

b. Present an award to the member with the best grade point average in agriculture

c. Present an award to the member who has shown the most progress--Consider attitude, improvement, participation, etc.

d. Provide a college scholarship to the graduating senior FFA member who has the highest grade point average and is planning to attend college

e. Secure sponsors from the community for scholarship awards

f. Use scholarship as one criteria for selecting the "Star Greenhand" and "Star Chapter Farmer" Awards

g. Have eligible members seek admission in the National Honor Society

h. Invite former members, National Honor Society members, and/or school administrators, to speak to the chapter on scholarship

i. Have chapter officers challenge other school organization officers to some scholastic competition such as a debate

j. Present DeKalb Award to senior who has the most outstanding scholastic and activities record

k. Organize tours to sites of educational merit such as a library or a college

l. Have successful scholars from upperclassmen assist students who are having scholastic problems

m. Post an honor roll in the classroom each grading period listing members who have a "B" or better grade average

n. Sponsor an "Ag Diction" or "Ag Terminology" contest

(NOTE: Members learn agriculture terms and are tested. Points are given on terms learned.)

2. Chapter maintains a file of current information concerning agricultural careers, occupations, and educational opportunities

Examples:

a. Maintain a chapter library of current books, trade publications, bulletins, and pamphlets dealing with agriculture and/or the FFA

b. Appoint a chapter librarian

c. Compile a file of materials concerning careers in agriculture

d. Request the chapter advisor to include in his course of study a unit concerning agricultural careers

e. Set up a "Career Day" for chapter members, utilizing professional agriculturists, former members, other businessmen, and guidance counselors

f. Arrange and finance a tour for juniors and seniors to a college and/or a vocational-technical center

g. Organize and finance a "short course" on some agricultural problem in the community; invite the public to participate

h. Award travel allowances to members who are participating in agricultural student exchange programs

i. Attend the Agricultural Career Show at the National FFA Convention in Kansas City

j. Work closely with guidance counselor to keep him informed of opportunities in agriculture

k. Invite school counselor to attend the National FFA Convention and the Agricultural Career Show--He may attend in place of the local FFA Advisor

3. Chapter provides a file of current information concerning scholarships and other financial assistance for post high school study

Examples:

a. Request the director of student affairs at each state college and university to send the chapter and guidance office a list of available grants, loans, and scholarships

b. Invite the school guidance counselor to speak informally with junior and senior members who are interested in securing student financial assistance

H. Recreation

1. Chapter provides organized recreational activities

Examples:

a. Sponsor a field day of athletic competition in cooperation with other FFA chapters and award prizes

b. Organize a basketball, softball, or baseball team for intramural participation

c. Conduct a ping pong or similar indoor sports tournament

d. Arrange for a skating, bowling, boating, swimming, or similar party

e. Hold a chapter rodeo, snowmobile race, shooting contest, or similar event

f. Go on a fishing trip--Award a prize for the biggest fish

g. Sponsor a fishing derby for the public

2. Chapter provides organized social activities

Examples:

a. Sponsor a trip to a sporting event

b. Have a barbecue or picnic for FFA members and their guests

c. Conduct a holiday party in cooperation with the FHA or other school group

d. Sponsor a hayride for chapter members and guests

e. Sponsor an educational tour to a farm, business, industry, university, or other place of interest to members

f. Hold a chapter "retreat" or camp

3. Other suggested activities

Examples:

a. Take a summer trip to different areas of the state

b. Visit a museum of interest to members

c. Conduct a tractor rodeo observing safety regulations

d. Arrange for a Christmas caroling activity

e. Participate in a livestock field day

I. Public Relations

1. Chapter sponsors an FFA awards and recognition program or similar activity

Examples:

a. Invite guests - school personnel, members of agricultural organizations, local businessmen, newspaper editors, radio station manager, and community leaders

b. Allow FFA members to conduct a major part of the program

c. Present agricultural proficiency award medals; other chapter and area FFA awards

d. Program be conducted at no cost to guests or participants

e. Introduce parents and guests to the assembly

f. Award the honorary degree to deserving individuals

2. Chapter makes use of media in acquainting the public with the FFA organization

Examples:

a. Prepare a weekly news column concerning FFA activities and/or agricultural informaiton

b. Release news stories periodically telling of achievements of the chapter or individual members

c. Schedule a regular radio or television program time with a local station

d. Send news stories to the state FFA publication

e. Prepare articles for the school newspaper

f. Send articles and pictures to "The National Future Farmer" magazine and other national magazines

g. Present a public program to a school assembly, civic club, or other community organizations

h. Prepare and display an educational exhibit

i. Sponsor outdoor billboard posters

j. Use materials bearing the emblem and letters of the FFA

k. Display FFA messages on marquees of local business

l. Put the letters "FFA" in lights on a hillside overlooking a highway

    m. Provide "An FFA Member Lives Here" sign for each member

    n. Erect chapter roadside signs on appropriate highways

    o. Place an FFA trophy case in the school lobby

    p. Prepare and distribute a chapter newsletter

3. Chapter provides complimentary subscription to the National Future Farmer magazine

   Examples:

   a. Have chapter member personally deliver the first issue

   b. Provide subscriptions to honorary farmers, businessmen, and school personnel

4. Chapter conducts activities that acquaint the school faculty with the FFA

   Examples:

   a. Hold a faculty reception

   b. Invite faculty members to the FFA banquet

   c. Sponsor a school faculty luncheon or breakfast

   d. Invite faculty members to be judges of appropriate FFA contests

   e. Issue an individual invitation to each teacher to attend an FFA Open House

5. Chapter secures movie illustrating an FFA activity

   Examples:

   a. Secure films depicting group activities, e.g. BOAC, National FFA Convention

   b. Show films depicting individual accomplishments, e.g., "Four Star Farmers of America"

      (NOTE: The above films are available from the Venard Organization, Peoria, Illinois 61611.)

6. Chapter participates in the FFA calendar program

   Examples:

   a. Secure sponsors for calendar program

b. Purchase FFA calendars for distribution to parents, school personnel, and businessmen in the area

7. Chapter conducts major activities during National FFA Week

Examples:

a. Hold a parent-member banquet

b. Place a chapter display in a public place

c. Sponsor a poster contest

d. Decalre a "jacket day" or "dress-up day" for members

e. Raise "Greenhands" to the degree of "Chapter Farmer"

f. Distribute FFA materials such as litter bags, safety warning stickers, etc.

g. Attend church as a group

h. Participate in a school assembly

i. Give a demonstration of good parliamentary procedure

j. Secure a section of a local newspaper for FFA news and information

k. Present a radio and/or television program

l. Arrange for mayor to issue a proclamation declaring National FFA Week for the area

m. Invite a state or national FFA officer to visit the chapter

n. Conduct a church service or other public program

o. Conduct the chapter FFA public speaking contest before a community audience

p. Provide FFA members as speakers for local organization's meetings

q. Purchase FFA Week materials from the National FFA Supply Service

r. Use FFA Week "How To" idea booklet provided to each chapter prior to FFA Week

8. Other suggested activities

   Examples:

   a. Prepare an "Easter Farm" or "Animal FArm" for the benefit of children
   b. Conduct a demonstration of good agricultural practices
   c. Organize a "Speakers' Bureau" of FFA members
   d. Participate in a parade
   e. Hold an oyster supper, barbecue, picnic, or similar activity
   f. Invite businessmen as speakers for a chapter meeting
   g. Sponsor a free "dairy luncheon" at shcool
   h. Conduct an FFA and Vo-Ag orientation program for eighth grade students
   i. Have chapter pay part of the cost of FFA jackets or loan members the money to make the purchase
   j. Use decals, stencils and other materials bearing the FFA emblem and name
   k. Keep a scrapbook which is displayed at appropriate times
   l. Maintain an FFA bulletin board
   m. Honor outstanding boosters with appreciation certificates or Honorary Chapter Farmer Degree

J. State and national activities

1. Chapter sends representatives to state and national conventions

   Examples:

   a. Select official local chapter delegates to attend state and national conventions
   b. Award travelships to convention participants to cover part of all of their expenses
   c. Organize transportation to conventions
   d. Arrange lodging and meals for chapter participants attending conventions

   e. Send degree and award recipients to state and national conventions

   f. Members wear proper dress to conventions and other activities

2. Chapter has successful candidates for advanced FFA degrees

   Examples:

   a. Keep a current record of each member's FFA projects and activities

   b. Have committee of members and advisor review records of all members to see which members qualify for advanced degrees

   c. Organize a system to move all FFA members toward advanced degrees

   d. Review and approve completed applications for advanced degrees and submit to the state office

   e. Post photographs of advanced degree recipients in the agriculture classroom

3. Chapter has candidate(s) for an FFA office above the chapter level

   Examples:

   a. Acquaint potential candidates with opportunities for service

   b. Supply potential candidates with opportunities for personal leadership development

   c. Provide assistance to members in completing applications

   d. Review and approve completed applications and submit to state office

4. Submit applications above the local chapter level for awards sponsored by the National FFA Foundation, Inc.

   Examples:

   a. Provide members with information, applications, and assistance in filling out forms

   b. Obtain the present Foundation medals to worthy chapter members

   c. Have members complete and submit completed Proficiency Award applications

   d. Complete and submit Building Our American Communities (BOAC) application

   e. Complete and submit Chapter Safety Award application

   f. Complete and submit National Chapter Award Program

5. Chapter enters judging contests sponsored by the state or national organizations

   Examples:

   a. Utilize judging contests in instructional program to involve all students

   b. Train members for judging events by working in the school and community

   c. Select members to represent the chapter in various contests above the chapter level

   d. Finance expenses for chapter judging teams participating above the chapter level

   e. Utilize FFA alumni members in training judging teams

6. Chapter participates in activities and/or programs to promote international understanding

   Examples:

   a. Invite foreign visitors to FFA chapter meetings and activities

   b. Conduct programs for foreign visitors at international assemblies

   c. Participate in National FFA Work Experience Abroad (WEA) Program

   d. Sponsor an orphan child in a foreign country

   e. Send materials to teachers, Peace Corps workers, missionaries, etc. in foreign countries

   f. Obtain slide presentation from National FFA Office on Work Experience Abroad program

   g. Invite school foreign exchange students to chapter meeting for program

7. Chapter participation in other national FFA activities

   Examples:

   a. Participate at National Convention by serving in the National Band, National Chorus, Courtesy Corps, National Talent Contest, or serving as an usher or stage crew member

   b. Arrange for a chapter representative to attend a Summer Washington Conference Program

   c. Have member exchange programs between chapters in different states

   d. Select Chapter Sweetheart or girl member to participate in American Royal Queen's Contest and/or State Contest

   e. Have members donate to international child relief, CARE, UNICEF, and others

K. Alumni Relations

1. Improve community relations and support by involving former and recent FFA members

   Examples:

   a. Hold joint meeting of FFA and FFA Alumni to keep them informed

   b. Chapter conduct activities to reinvolve former FFA members

   c. Conduct an activity to build FFA Alumni Association membership in the community

   d. Invite alumni to be chaperones for FFA activities

   e. Cooperate with Alumni Affiliate to construct a joint community agricultural display

   f. Recognize outstanding former members with "Alumnus of the Year" award

2. Improving Educational Experiences

   Examples:

   a. Have Alumni plan and conduct educational tours and demonstrations

   b. Use alumni member to serve on advisory council

c. Involve alumni in preparing judging teams

d. Involve alumni as resource people for Vo-Ag instructors

e. Use alumni members as substitute teachers

f. Inform alumni of members who need job placement

3. Chapter cooperate with FFA Alumni affiliate to increase chapter participation, above local level and to encourage improved scholarship

Examples:

a. Have alumni affiliate to sponsor chapter members to National Leadership Conference or Conventions

b. Have alumni provide transportation to FFA functions and activities

c. Have alumni serve as "Big Brothers" for Greenhand

d. Have alumni affiliate sponsor chapter judging contest

e. Encourage Alumni Affiliate to provide awards for outstanding members

f. Have alumni provide scholarship for "Outstanding Senior"

g. Involve alumni in providing tours to college campuses and technical institutes and/or community college

DEVELOPING THE FFA PROGRAM OF ACTIVITIES
UNIT I

ASSIGNMENT SHEET #1--DEVELOP AN FFA PROGRAM OF ACTIVITIES

Choose two of the major divisions and list the activities that you feel your chapter should participate in. Class members should choose different divisions whereby all divisions will be accounted for. Refer to the Superior Chapter report to make sure your chapter will meet the requirements for Superior Chapter.

Division_______________

Committee Chairman_______________

Members:

1.
2.
3.
4.

Suggested Activities:

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

Division______________

Committee Chairman______________

Members:

1.

2.

3.

4.

Suggested Activities:

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

DEVELOPING THE FFA PROGRAM OF ACTIVITIES
UNIT I

TEST

1. Define the following terms:

   a. Program of activities--

   b. Executive committee--

   c. Sub-committee--

2. Select the benefits of having a well planned program of activities by placing an "X" by the correct statement.

   _____a. Include goals that serve as a means of directing the chapter activities in a positive manner

   _____b. Provide opportunity for members to use and develop skills taught in grade school

   _____c. Provide school administration and community with a better understanding of the local chapter

   _____d. Represent the thinking of a majority of the members but involves only junior and senior students

   _____e. Necessary for proper chapter recognition on the local, state, and national level

   _____f. Point out the vital part FFA has in a vocational agriculture department

3. Select the major divisions of the FFA Program of Activities by placing an "X" by the proper division

   _____a. Cooperation

   _____b. Leadership

   _____c. Preventing loss of livestock

   _____d. Conduct of meetings

   _____e. Earnings, savings, and investments

   _____f. Special activities

   _____g. National FFA Week

   _____h. Community service

   _____i. Scholarship

_____j. State contests

_____k. Alumni relations

4. List four parts of a program of activities.

   a.

   b.

   c.

   d.

5. Select the factors that contribute to a satisfactory program of activities by placing an "X" by the correct factors.

   _____a. All committee chairmen realize it is their program and are involved

   _____b. Sufficient time given to evaluate, plan, and organize chapter activities

   _____c. Final program of activities are planned in May or whenever new officers are elected

   _____d. Resource personnel used in program planning and evaluation

   _____e. A well developed, realistic, and workable ways and means

   _____f. Review of the calendar of activities with the committee chairman and advisor

   _____g. Committee organization and membership cooperation

   _____h. Challenging and practical goals selected and based upon interest and needs of the state association

6. Select the steps to follow in constructing and conducting a satisfactory program of activities by placing an "X" by the proper steps.

   _____a. Have continuous and periodic evaluation of the chapter activities

   _____b. Have executive committee, under the guidance of the president appoint the program of activities committee

   _____c. Choose subcommittee members by their class rank and grade classification

   _____d. Encourage vice-president to meet with each committee to assist them in formulating their phase of the program of activities

   _____e. Secure copies of other chapter programs and get ideas on other suitable program ideas _____f. Instruct the president to keep informed on committee progress and to make regular reports

_____g. Direct the reporter to record the chapter accomplishments on the program of activities wall chart or on a regular activity report form

7. Match the chapter activity on the left with the correct division on the right.

_____a. Provide shop project awards

_____b. Have veterinarian explain disease prevention and parasite control of livestock

_____c. Assist charitable organizations and campaigns

_____d. Hold at least one meeting each month at a regularly scheduled time

_____e. Establish a livestock breeding service cooperative

_____f. Provide members with experience in public speaking

_____g. Have representatives from a commercial bank speak on proper credit procedures

_____h. Present an award to the member with the best grade point average in agriculture

_____i. Take a summer trip to different areas of the state

_____j. Present Honorary Chapter farmer degree to local citizen

_____k. Select official local chapter delegates to attend State and National FFA Convention

_____l. Chapter conduct activities to reinvolve former FFA members

1. Cooperation
2. Community service
3. Leadership
4. Earnings, savings and investments
5. Conduct of meeting
6. Supervised agriculture occupations experience
7. Recreation
8. Scholarship
9. FFA public relations
10. Participation in state and national activities
11. Alumni Relations

8. Develop an FFA program of activities

(NOTE: If this activity has not been accomplished prior to the test, ask your instructor when the above activity should be completed.)

DEVELOPING THE FFA PROGRAM OF ACTIVITIES
UNIT I

ANSWERS TO TEST

1. a. Outline of activities covering a definite period which includes specific goals, ways and means of reaching these goals, and provisions for checking on the accomplishments

   b. Committee made up of chapter officers and the chairman of each committee

   c. Members other than the chairmen that make up a committee within the program of activities

2. a

   c

   e

   f

3. a

   b

   d

   e

   h

   i

4. Any four of the following:

   a. Division of the program of activities

   b. Activities to be participated in under the division

   c. Names of the committee members who will be responsible for each activity

   d. Goals to be accomplished under each activity

   e. Ways and means of reaching each goal

   f. Accomplishment information upon completing of each goal

5. b

   d

   e

   g

6. a

   d

   e

   g

7. a. 6

   b. 6

   c. 2

   d. 5

   e. 1

   f. 3

   g. 4

   h. 8

   i. 7

   j. 9

   k. 10

   l. 11

8. Evaluated to the satisfaction of the instructor.

PARLIAMENTARY PROCEDURE AND PUBLIC SPEAKING
UNIT III

TERMINAL OBJECTIVE

After completion of this unit, the student should be able to apply correct parliamentary procedure in a meeting situation for all offices and as a member. He should also be able to write and deliver a speech over a topic of his choice. This knowledge and skills will be evidenced through actual demonstration and by scoring eighty-five percent on a unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. List two principles upon which parliamentary procedure is based.
2. Select from a list three characteristics of a good chairman.
3. Match types of motions with the appropriate definition.
4. Write the characteristics of the kinds of motions used in conducting a meeting.
5. List three purposes for making a speech.
6. Write the outline that most speeches follow.
7. List the three "ups" of speech delivery.
8. List three different speech contests in which FFA members may participate.
9. Demonstrate the ability to:
   a. Use parliamentary procedure correctly.
   b. Write and deliver a speech two to three minutes in length.

PARLIAMENTARY PROCEDURE AND PUBLIC SPEAKING
UNIT III

SUGGESTED ACTIVITIES

I. Instructor:

A. Provide students with objective sheet.

B. Provide students with information sheet.

C. Discuss terminal and specific objectives.

D. Have student conduct a business meeting using correct parliamentary procedure.

E. Have students give speeches.

F. Give test.

II. Student:

A. Read objectives.

B. Study information sheet.

C. Participate in discussion in business meetings and serve as chairman at least once.

D. Write and deliver a speech.

E. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

A. Objectives

B. Information sheet

C. Transparency masters

1. TM 1 - Parliamentary Procedure Scorecard (two pages)
2. TM 2 - Public Speaking Score Sheet

D. Test

E. Answers to test

II. References:

A. Jones, O. Gargiels. Parliamentary Procedure at a Glance. New York: Meredith Press, 1949.

B. Stewart, Wilbur F. Helps in Mastering Parliamentary Procedure. New Concord, Ohio: Co-op Printship, 1954.

C. Jones, O. Garfield. Senior Manual for Group Leadership. New York: Appleton-Century-Crofts, Inc., 1949.

D. Sturgis, Alice F. Parliamentary Procedure. New York: McGraw-Hill Book Co., Inc.

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F. Sutherland, S.S. When You Preside. Danville, Illinois: Interstate Printers and Publishers, 1959.

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H. FFA Official Manual. Alexandria, Virginia: Future Farmers Supply Service, 1974.

I. Carnegie, Dale. Public Speaking and Influencing Men in Business. Association Press, 1961.

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K. Leadership of Youth Groups: Communications Skills. Kansas City, Missouri: Farmland Industries, 1967.

L. Ross, Robert W. Oral Presentation and Visual Aids. Washington, D.C.: R.W. Ross Associates.

M. Gray, Jarrell D. and J.R. Jackson. Leadership Training and Parliamentary Procedure for FFA. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1958.

N. Purkey, R.D. Handbook on Speech for FFA. Danville, Illinois: Interstate Printers and Publishers, 1958.

O. Kansas FFA Activities and Awards Opportunities 1976-77, State Department of Education, Agriculture Education, Topeka, Kansas

P. Henderson, Melvin and Rucker, Herbert J. A Guide to Parliamentary Practices. Danville, Illinois: Interstate Printers and Publishers.

PARLIAMENTARY PROCEDURE AND PUBLIC SPEAKING
UNIT III

INFORMATION SHEET

I. Principles upon which parliamentary procedure is based

   A. The right of the majority to rule

   B. The right of the minority to be heard and protected

II. Characteristics of a good chairman

   A. Be impartial

   B. Inspire confidence in the members

   C. Provide leadership

III. Types of motions (Transparency 1)

   A. Main motion

      1. Main idea before the meeting

      2. Only one main motion before the meeting

   B. Privileged Motion

      1. Does not relate to pending questions

      2. Has priority overall other motions, so must be acted upon at once

   C. Subsidiary Motion

      1. Motion applied to a pending motion to help dispose of that motion

      2. Must be decided before continuing with the pending question

   D. Incidental Motion

      1. Arise out of a pending motion

      2. Must be decided before continuing with pending question

IV. Table of motions and rules that apply to motions

V. Purposes for making a speech

A. To inform

B. To entertain

C. To persuade

VI. Speech outline

A. Introduction

B. Discussion

C. Conclusion

VII. Three "ups" of a speech delivery

A. Stand up (avoid leaning on podium)

B. Speak up

C. Shut up (short conclusion)

VIII. FFA Speeches

A. Public Speaking

1. Senior Division

a. To qualify for State and National competition speech topic must be

1) of an agricultural character (nature) and of general interest to the public

2) a minimum of six minutes long and a maximum of eight long

(NOTE: There are some variations in district speech contest. The scorecard included is the National FFA Speech scorecard which is used in the state contest. Transparency 2)

b. An additional five minutes will be allowed for questions relating to the speech

2. Junior, Sophomore, Freshman divisions

a. District level contests

b. Rules vary among districts

B. Extemporaneous Speaking

1. Contestant is given 20 minutes to prepare a 3-5 minute speech from a list of topics

2. Rules may vary among districts

3. State competition held during the State High School Agricultural and Agricultural Mechanics contests in Manhattan

C. Greenhand Creed Speaking

1. Contestant delivers creed from memory
2. Contestant answers questions from judges
3. Rules may slightly vary among districts
4. State competition held during the State convention

(NOTE: More information on these contests are found in the last edition of Kansas FFA Activities and Awards Opportunities or by contacting the State Office.)

Official Scorecard - Parliamentary Procedure

Score	Abilities Demonstrated	S	D	A	VOTE	Team Score
	Call to order					
20	Poise and personal appearance of presiding officer and manner displayed (1)					
40	Poise, appearance, and manner displayed by team					
10	Grammar and sentence structure (2)					
20	General effect and the use of realistic measures					
10	Secretary's minutes (used in case of tie)					
20	Effective use of debate					
RANKING MOTIONS (Ranked according to precedence)						
A	PRIVILEGED MOTIONS	S	D	A	VOTE	
10	To fix time to adjourn (4)	Y	N	(7)	M	
10	To adjourn (5)	Y	N	N	M	
10	To take a recess (6)	Y	N	(7)	M	
10	To raise a question or privilege	N	N	N	(8)	
10	To pass the gavel	N	N	N		
B	SUBSIDIARY MOTIONS					
10	To lay on the table	Y	N	N	M	
10	To call for the previous question	Y	N	N	2/3	
10	To limit or extend time of debate	Y	N	(7)	2/3	
10	To postpone definitely (to certain time)	Y	Y	Y	M	
10	To commit or refer	Y	Y	Y	M	
10	To amend proposed amendment	Y	(9)	N	M	
10	To amend	Y	(9)	Y	M	
10	To postpone indefinitely	Y	Y	N	M	
C	MAIN MOTIONS					
30	Main motion (to introduce business)	Y	Y	Y	M	
NON-RANKING MOTIONS						
A	INCIDENTAL MOTIONS					
10	To raise a point of order	N	N	N	(10)	
10	To appeal from the decision of chair	Y	(11)	N	M	
10	To suspend the rules	Y	N	N	2/3	
10	To divide the question	(12)	N	Y	M	
10	To call for a division of house	N	N	N	(13)	
10	To rise to a parliamentary inquiry	N	N	N	N	
10	To rise to request information	N	N	N	N	
10	To withdraw a motion	N	N	N	N	
10	To provide manner of voting	Y	N	Y	Y	
B	UNCLASSIFIED MOTIONS					
10	To take from the table	Y	N	N	M	
10	To reconsider	Y	(14)	N	M	
30	Debate (5 points each for 6 times debate is used)					
20	Response to judge's questioning (state contest only)					
120	Parliamentary procedure quiz (20 questions)					
560	FINAL SCORE					

"D"--DEBATABLE; "A"--AMENDABLE; "M"--MAJORITY VOTE;
"Y"--Yes; "N"--NO

NOTES Pertaining to Specific Items on Official Scorecard

(1) Also includes proper use of gavel.
(2) Means correct English, clear, concise, direct, and well-phrased.
(3) Omit.
(4) Is a privileged motion only if made while another motion is pending, and in an assembly that has made no provision for meeting on the same or next day; otherwise, it is a main motion. The answers apply to the privileged motion.
(5) When unqualified, is always a privileged motion except when effect would be to disband the group permanently. The answers apply to the privileged motion, not to motion to adjourn.
(6) Is a privileged motion if made when other business is pending; otherwise, is a main motion. Answers apply to the privileged motion.
(7) Can be amended as to time.
(8) Is usually disposed by chair, without vote.
(9) Can be debated only when the question being amended is debatable.
(10) Is usually decided by chair, without calling for a vote
(11) Cannot be debated if made during a division of the assembly, or when the pending question is undebatable. Cannot be debated when it applies to indecorum, transgression of the rules of speaking, or to priority of business.
(12) The question must be divided at the request of a single member, (which request can be made when another has the floor), provided the resolutions relate to different subjects which are independent of each other.
(13) When a division is called for, the chair proceeds to take the vote again by rising. No vote is taken on whether a division shall be made, i.e., on whether a standing vote shall be taken.
(14) Debatable when the question to be reconsidered is debatable.

(NOTE: The guide used to make the scoresheet was: "Roberts Rules of Order," and "A Guide to Parliamentary Practices" by Melvin Henderson and Herbert J. Rucker of the University of Illinois.)

JUDGES SCORE SHEET   STATE PUBLIC SPEAKING CONTEST - FUTURE FARMERS OF AMERICA

Part 1 for Scoring and Composition

Items to be scored	Points Allowed	Points Awarded Contestants							
		1	2	3	4	5	6	7	8
1. Content of Manuscript Importance and appropriateness of subject Suitability of the material used Accuracy of the Statements included Evidence of purpose Completeness and accuracy of bibliography	200								
2. Composition of Speech - Manuscript Organization of content Language used Unity of thought Sentence structure Logical development Accomplishment of purpose	100								
Part II for Scoring Delivery of the Production:									
Items to be scored	Points Allowed								
1. Voice Pitch Articulation Quality Force Pronunciation	100								
2. Stage Presence Personal appearance Attitude Poise and body posture Confidence Ease before audience Personality	100								
3. Power of Expression Fluency Directness Emphasis Communicative ability Sincerity Conveyance of thought and meaning	200								
4. Response to Questions Ability to satisfactorily answer the questions on the speech which are asked by the judges indicating originality, familiarity with subject, and ability to think quickly	200								
5. General Effect Extent to which the speech was interesting, understandable, convincing, pleasing, and held attention	100								
Total	1,000								
Less time each minute	20								
Grand Totals									
Numerical - or Final placing of contestants									

PARLIAMENTARY PROCEDURE AND PUBLIC SPEAKING
UNIT III

TEST

1. List two principles upon which parliamentary procedure is based.
   a.
   b.

2. List three characteristics of a good chairman
   a.
   b.
   c.

3. Match the types of motions with the appropriate definition.

_____a. To end meeting
_____b. To close debate
_____c. Main idea before the group
_____d. To change the main idea
_____e. Used when the chair has made an error

1. Main motion
2. Amendment
3. Adjournment
4. To reconsider
5. Point of order

4. Write the characteristics of motions by filling in the blanks in the following table.

	Second Required	Debatable	Vote Required	Amendable
a. Main motion				
b. Amendment				
c. Adjournment				
d. Lay on table				
e. Point of order				

5. List three purposes for making a speech.
   a.
   b.
   c.

6. Write the outline form that most speeches follow.
   a.
   b.
   c.

7. List the three "ups" of speech delivery.
   a.
   b.
   c.

8. List three speech contests in which FFA members may participate.
   a.
   b.
   c.

9. Demonstrate the ability to:
   a. Use parliamentary procedure correctly.
   b. Write and deliver a two to three minute speech.

PARLIAMENTARY PROCEDURE AND PUBLIC SPEAKING
UNIT III

ANSWERS TO TEST

1. a. The right of the majority to rule
   b. The right of the minority to be heard and protected

2. a. Be impartial
   b. Inspire confidence in the members
   c. Provide leadership

3. a. 3
   b. 4
   c. 1
   d. 2
   e. 5

4. a. Main motion	Yes	Yes	Yes	Majority
b. Amendment	Yes	Yes	Yes	Majority
c. Adjournment	Yes	No	No	Majority
d. Lay on table	Yes	No	No	Majority
e. Point of order	No	No	No	None

5. a. To inform
   b. To entertain
   c. To persuade

6. a. Introduction
   b. Discussion
   c. Conclusion

7. a. Stand up (avoid leaning on podium)
   b. Speak up
   c. Shut up (short conclusion)

8. a. FFA Public Speaking
   b. Extemporaneous Speaking
   c. Greenhand Creed Speaking

9. Performance skills will be evaluated to the satisfaction of the instructor.

IMPORTANCE OF PUBLIC SPEAKING
UNIT I

TERMINAL OBJECTIVE

After completion of Unit I, the student should be able to recognize the advantages of public speaking and relate these advantages to his vocational agriculture training. He should be able to listen to a speech and evaluate what the speaker is saying and be able to use discussion groups as a means of improving his or her speaking ability. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the post test.

SPECIFIC OBJECTIVES

After completion of instruction, the student should be able to:

1. Match terms associated with public speaking to the correct definition.
2. Select the percent of time an individual spends speaking from a list of alternatives.
3. Name four ways in which public speaking will benefit you today as a student and later on as a leader in your community.
4. Name three reasons for public speaking.
5. Name four advantages of being able to deliver a speech.
6. Distinguish between good speaking and bad speaking when given an example of each.
7. Match poor habits of speaking to a means of improvement.
8. Select three key words from a list of words that attract the attention of a prospective employer.
9. Name three advantages of being part of a group discussion as related to your ability to be a speaker.
10. Name the four requirements of a group discussion.
11. Match the types of discussion groups to the correct definition.
12. Name five factors or rules to follow when organizing a group discussion.
13. Name three ways to improve your speaking ability.
14. Name five factors to look and listen for when evaluating someone as a speaker.

15. Match the speaker's goals to the listener's response when given the listener's responses.
16. Demonstrate the ability to take an active part in a group discussion when given the type of discussion group and the topic for discussion.
17. Demonstrate the ability to evaluate a speaker giving a speech using the evaluation instrument provided.

IMPORTANCE OF PUBLIC SPEAKING
UNIT I

SUGGESTED ACTIVITIES

I. Instructor:

   A. Provide students with objective sheet.
   B. Provide students with information and assignment sheets.
   C. Discuss terminal and specific objectives.
   D. Discuss information and assignment sheets.
   E. Inform students of any speeches being given in the community.
   F. Identify the type of discussion group and select the topic for the students to use in the discussion.
   G. Give test.

II. Students:

   A. Read objectives.
   B. Study information sheets.
   C. Participate in group discussion and turn in assignment sheet.
   D. Attend a meeting where a speech is being given and evaluate the speaker.
   E. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

   A. Objectives
   B. Information sheets
   C. Assignment sheets
      1. Assignment Sheet #1 - Participate in a Group Discussion
      2. Assignment Sheet #2 - Evaluate a Speaker
      3. Assignment Sheet #3 - Identify Prominent Agriculture People and Evaluate Their Speaking Ability
   D. Test
   E. Answers to test

II. References:

A. Oliver, Robert T. and Rupert L. Cortright. Effective Speech. New York: Holt, Rinehart, and Winston.

IMPORTANCE OF PUBLIC SPEAKING
UNIT I

INFORMATION SHEET

I. Terms and definitions

- A. Speech - A form of symbolism; an expression of thought, language, voice, and action; a product of the total personality
- B. Communication - A two-way process of speaking and listening
- C. Communicative speech - A speech that is not addressed at or toward its hearers; a talk with and to its listeners
- D. Rapport - A sympathetic relationship of mutual understanding and feeling
- E. Circular response - A mechanism through which rapport is established and maintained
- F. Listening - A process of more than and different from merely hearing; the active co-partnership role in any act of oral communication
- G. Discussion - A learning process, a process of sharing the information and experiences of a group
- H. Debate - An opportunity for presenting an argument for and against a proposed plan of action, so that the participants and listeners may make up their minds and be prepared to vote on a certain issue

II. Communicative activities of individuals

- A. Nine percent in writing
- B. Sixteen percent in reading
- C. Thirty percent in talking
- D. Forty-five percent in listening

III. Benefits of public speaking

- A. Builds friendship
- B. Exchanges information
- C. Gives or asks for orders
- D. Entertains others
- E. Displays wit, intelligence, or information

IV. Reasons for public speaking
  - A. Expression
  - B. Communication
  - C. Social control

V. Advantages of speech delivery
  - A. Improve the art of speaking
  - B. Develop clearer understanding of yourself
  - C. Develop better understanding of other people
  - D. Develop more logical, orderly habits of thinking
  - E. Develop skill in evaluating what you hear

VI. Good speaking vs. Bad speaking
  - A. Good speaking - occurs when the speaker is communicating with an audience
  - B. Bad speaking - occurs when the speaker is talking at the audience

VII.	Poor habits of speaking	Means of improvement
A.	Careless preparation	Research and practice speech
B.	Boastfulness	Accuracy; being yourself
C.	Fault-finding	Accept constructive criticism
D.	Unsupported facts	Know what you are talking about
E.	Dull voice	Be enthused and pleasant
F.	Nervously rapid speech and/or pacing	Calm and steady rate of delivery

VIII. Key words of attention
  - A. Appearance
  - B. Personality
  - C. Speech

IX. Advantages of group discussions
  - A. Increases conversational skills
  - B. Develops skills in decision-making
  - C. Contributes directly to improvement in public speaking

X. Requirements of group discussion

- A. Phrasing each question for discussion
- B. Organizing the discussion
- C. Leading the discussion
- D. Participating in discussion

XI. Types of group discussion

- A. Round-table - A group of individuals seated around a table and each member responds directly to the question
- B. Lecture-form - An expert on the subject gives a lecture and the discussion comes directly from the audience in the form of questions
- C. Panel discussion - A panel of experts on the subject sits on a platform and discusses the questions amoung themselves while the audience listens
- D. Debate-form - Similar to the lecture-form but usually presents both sides of the issue and the questions
- E. Symposium - A group of short talks are presented by experts on various phases of the subject or from different viewpoints which can later be opened to the listeners
- F. Personal interviews - An individual uses the principles of both conversation and discussion in conducting personal interviews or applying for a job

XII. Rules to follow when organizing group dicussions

- A. Clearly define the topic
- B. Group should agree upon the principles or objectives
- C. Analyze question thoroughly
- D. Determine how far differences in agreements may extend
- E. Leader of discussion should summarize what was discussed

XIII. Improve speaking ability

- A. Speak to satisfy yourself
- B. Relate speech to individual personality
- C. Speech should give meaning to audience

XIV. Factors to consider when evaluating a speech

- A. Is what the speaker saying true?
- B. Does speech increase audience respect?
- C. Is the speech audience-centered?

D. Does speech progress from introduction to conclusion?

E. Is audience listening to the speech or the speaker?

XV.

Speaker's goal	Listener's response
A. To inform	To learn
B. To induce belief	To be convinced
C. To move to action	To do what is urged
D. To inspire	To feel inspired
E. To entertain	To enjoy

IMPORTANCE OF PUBLIC SPEAKING
UNIT I

ASSIGNMENT SHEET #1 - PARTICIPATE IN A GROUP DISCUSSION

You have been assigned to a discussion group which will discuss a topic selected by the instructor. Using the information previously studied, organize the discussion and take an active part with the group members. In the space provided, write the part of the discussion that you will be responsible for presenting. At the close of the discussion, write a short paragraph concerning your own personal feelings toward the benefits of a discussion group.

Topic to be discussed: ____

Group member's discussion part: ____________________________________

Evaluate the discussion group by answering the following questions:

1. Was the discussion organized? ______________
2. Was the dicussion properly led? ______________
3. Did each group member participate in the discussion? ______________
4. Was the topic clearly defined? ______________
5. Did the group members agree upon the principles or objectives of the dicussion? ______________
6. Did the leader of the discussion group summarize what was discussed?

   ____

Benefits of discusion groups:

IMPORTANCE OF PUBLIC SPEAKING
UNIT I

ASSIGNMENT SHEET #2 - EVALUATE A SPEAKER

Select someone who is speaking in your local community and by using the questions below, rate his skill as a speaker. If no such person is available within you community, relay on other means such as radio and television. After listening to the speech, complete the evaluation form below and turn in to the instructor for his evaluation.

1. Who was the speaker?____
2. Speech was given to what type of audience?____________________
3. Was the speech a communication speech? _______________________
4. Were there any poor habits of speaking detected? ____________
   If yes, check the habit or habits.
   a. Careless preparation ______
   b. Boastfulness ______
   c. Fault-finding ______
   d. Unsupported facts ______
   e. Dull voice ______
   f. Rapid speaking ______
5. Which of the following were goals of the speaker as determined by the text of his speech? Place an "X" by the correct one.
   a. To inform ______
   b. To induce belief ______
   c. To move to action ______
   d. To inspire ______
   e. To entertain ______
6. Was the speech audience-centered? ____________________________
7. Did you agree with what the speaker was saying?________________
8. Discuss in a short paragraph your overall opinion of the speech and your impression of the speaker. (Use back of this page if necessary.)

IMPORTANCE OF PUBLIC SPEAKING
UNIT I

ASSIGNMENT SHEET #3 - IDENTIFY PROMINENT AGRICULTURE PEOPLE AND EVALUATE THEIR SPEAKING ABILITY

Prominent National Person ____________________________

Evaluation of Speaking Ability:

Prominent National Person ____________________________

Evaluation of Speaking Ability:

Prominent National Person ____________________________

Evaluation of Speaking Ability:

Prominent Local Person ____________________________

Evaluation of Speaking Ability:

Prominent Local Person ____________________________

Evaluation of Speaking Ability:

Prominent Local Person ____________________________

Evaluation of Speaking Ability:

IMPORTANCE OF PUBLIC SPEAKING
UNIT I

TEST

1. Match the terms on the right to the correct definition.

_____a. An opportunity for presenting an argument for and against a proposed plan of action so that the participants and listeners may make up their minds and be prepared to vote on a certain issue

_____b. A two-way process of speaking and listening

_____c. A learning process; a process of sharing the information and experiences of a group

_____d. A form of symbolism; an expression of thought, language, voice and action; and a product of the total personality

_____e. A mechanism through which rapport is established and maintained

_____f. A speech that is not addressed at or toward its hearers; a talk with and to its listeners

_____g. A sympathetic relationship of mutual understanding and feeling

_____h. A process of more than and different from merely hearing; the active co-partnership role in any act of oral communication

1. Speech
2. Rapport
3. Communication
4. Debate
5. Discussion
6. Circular response
7. Communicative speech
8. Listening

2. An individual spends a portion of his time in speaking. From the list of alternatives, select the one that represents speaking time. Place and "X" in the blank.

_____a. Nine percent

_____b. Sixteen percent

_____c. Thirty percent

_____d. Forty-five percent

3. Name four ways in which public speaking will benefit you today as a student and later on as a leader in your community.

    a.

    b.

    c.

    d.

4. Name three reasons for public speaking.

    a.

    b.

    c.

5. Name four advantages of being able to deliver a speech.

    a.

    b.

    c.

    d.

6. Place an "X" in the blank if the statement represents an example of good speaking.

    _____a. Occurs when the speaker is talking at the audience.

    _____b. Occurs when the speaker is communicating with an audience.

7. Match the poor habits of speaking on the right to the correct means of improvement.

_____a.	Accept constructive criticism	1.	Careless preparation
_____b.	Know what you are talking about	2.	Boastfulness
_____c.	Research and practice speech	3.	Fault-finding
_____d.	Accuracy; being yourself	4.	Unsupported facts
_____e.	Nervously rapid speech and/or pacing	5.	Calm and steady rate
_____f.	Dull voice	6.	Be enthused and pleasant

8. Select three key words from the list of words on the right and write them in the blanks provided. These words are very important in eyes of a prospective employer.

a. ____________
b. ____________
c. ____________

1. Smart
2. Appearance
3. Height
4. Speech
5. Age
6. Personality

9. Name three advatages of being part of a group discussion as related to your ability to be a speaker.

a.
b.
c.

10. Name the five requirements of a group discussion.

a.
b.
c.
d.
e.

11. Match the types of group discussion on the right to the correct definition.

_____a. An individual uses the principles of both conversation and discussion in conducting personal interviews or applying for a job

_____b. A group of individuals seated around a table with each member responding directly to the question

_____c. A group of short talks are presented by experts on various phases of the subject or from different viewpoints which can later be opened to the listeners

_____d. An expert on the subject gives a lecture and the discussion comes directly from the audience in the form of questions

1. Round-table
2. Lecture-form
3. Panel discussion
4. Debate-form
5. Symposium
6. Personal interview

_____e. Similar to the lecture-form but usually presents both sides of the issue and quest

_____f. A panel of experts on the subject sits on a platform and discusses the questions among themselves while the audience listens

12. Name five rules or factors to follow when organizing a group discussion.

    a.

    b.

    c.

    d.

    e.

13. Name three ways to improve your speaking ability.

    a.

    b.

    c.

14. Name five factors to look and listen for when evaluating someone as a speaker.

    a.

    b.

    c.

    d.

    e.

15. Match the speaker's goals on the right to the listener's responses.

_____a. To learn	1. To entertain
_____b. To enjoy	2. To inform
_____c. To be convinced	3. To induce belief
_____d. To feel inspired	4. To move to action
_____e. To do what is urged	5. To inspire

16. Demonstrate the ability to:

    a. Participate in group discussion

    b. Evaluate a speaker.

    c. Identify prominent national and local agriculture people and evaluate speaking ability.

IMPORTANCE OF PUBLIC SPEAKING
UNIT I

ANSWERS TO TEST

1. 4 a.
   3 b.
   5 c.
   1 d.
   6 e.
   7 f.
   2 g.
   8 h.

2. c.

3. Any four of the following:
   a. Builds friendship
   b. Exchanges information
   c. Gives or asks for orders
   d. Entertains others
   e. Displays wity, intelligence, or information

4. a. Expression
   b. Communication
   c. Social control

5. Any four of the following:
   a. Improve the art of speaking
   b. Develop clearer understanding of yourself
   c. Develop better understanding of other people
   d. Develop more logical, orderly habits of thinking
   e. Develop skill in evaluating what you hear

6. b.

7. _3_ a.
   _4_ b.
   _1_ c.
   _2_ d.
   _5_ e.
   _6_ f.

8. a. Appearance
   b. Speech
   c. Personality

9. a. Increases conversational skills
   b. Develops skills in decision-making
   c. Contributes directly to improvement in public speaking

10. a. Phrasing each question for discussion
    b. Organizing the discussion
    c. Leading the discussion
    d. Participating in discussion

11. _6_ a.
    _1_ b.
    _5_ c.
    _2_ d.
    _4_ e.
    _3_ f.

12. a. Clearly define the topic
    b. Group should agree upon the principles or objectives
    c. Analyze question thoroughly
    d. Determine how far differences in agreements may extend
    e. Leader of discussion should summarize what was discussed

13. a. Speak to satisfy yourself
    b. Relate speech to individual personality
    c. Speech should give meaning to audience

14. a. Is what the speaker saying ture?
    b. Does speech increase audience respect?
    c. Does speech progress from introduction to conclusion?
    d. Is audience listening to the speech or the speaker?

15. __2__ a.
    __1__ b.
    __3__ c.
    __5__ d.
    __4__ e.

16. Performance skills will be evaluated by the instructor.

DEVELOPING AND DELIVERING A SPEECH
UNIT II

TERMINAL OBJECTIVE

After completion of this unit, the student should be able to identify the type of intent of a speech when listening to or reading a text of a speech. He should be able to select, gather information, and deliver a three to eight minute speech on some phase of vocational agriculture training. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the post test.

SPECIFIC OBJECTIVES

After completion of instruction, the student should be able to:

1. Match terms associated with developing and delivering a speech to the correct definition.
2. Name the five general intents of a speech.
3. Name the steps in developing ideas concerning a speech.
4. Name the "must do" factors for beginning speakers when preparing a speech.
5. Name the three factors to remember when recording material for a speech.
6. Discuss in a short paragraph the procedures for using quotations in a speech.
7. Name three important factors to remember when using statistics in a speech.
8. Select the most frequent error used by beginning speakers when given a list of alternatives.
9. Name three factors that facilitate speech development.
10. Distinquish between a topical and a sentence outline when given definitions of each.
11. Name four reasons for outlining a speech.
12. Name the three principal parts of an outline and arrange them in order of development.
13. Name four rules to follow when developing the main ideas of a speech.
14. Discuss in a short paragraph how the introduction is used in a speech.
15. Discuss in a short paragraph how the conclusion should blend in with the speech.

16. Name three ways of making a good first impression when giving a speech.
17. Name five ways of developing and adding meaning to your delivery.
18. Name three reasons for using gestures in public speaking.
19. Name three ways of developing the proper delivery.
20. Read a speech and identify the introduction, body, and conclusion.
21. Listen to a major speech, sermon, or talk and write a sentence outline of the speech.
22. Select a speech topic for the FFA Public Speaking Contest, conduct research on the subject and write the information on the sheet provided--omit quotation marks.
23. Write a sentence outline of the speech from the information collected.
24. Demonstrate the ability to write and deliver a three to eight minute speech to the class.

DEVELOPING AND DELIVERING A SPEECH
UNIT II

SUGGESTED ACTIVITIES

I. Instructor:
   - A. Provide students with objective sheet.
   - B. Provide students with information and assignment sheets.
   - C. Prepare transparencies.
   - D. Discuss terminal and specific objectives.
   - E. Discuss information and assignment sheets.
   - F. Inform students of any speeches being given in the community.
   - G. Give tests.

II. Students:
   - A. Read objectives.
   - B. Study information sheets.
   - C. Complete all assignment sheets and return to instructor for his evaluation.
   - D. Present a three to eight minute speech to the class.
   - E. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:
   - A. Objectives
   - B. Information sheets
   - C. Judge's score sheet
   - D. Contestant's certification
   - E. Transparency masters
     - 1. TM 1 - What is an Outline?
     - 2. TM 2 - What Should an Outline Look Like?
     - 3. TM 3 - Principal Parts of an Outline.
     - 4. TM 4 - Conclusion

F. Assignment sheets

  1. Assignment Sheet #1- Read a Speech
  2. Assignment Sheet #2- Select Speech Topic
  3. Assignment Sheet #3- Write Sentence Outline on Selected Topic
  4. Assignment Sheet #4- Write and Deliver a Speech

G. Test

H. Answers to test

II. References:

A. Eisenson, Jon and Paul H. Boase. Basic Speech. New York: The Macmillan Company.

B. Oliver, Rober T. and Rupert L. Cortright. Effective Speech. New York: Holt, Rinehart, and Winston.

DEVELOPING AND DELIVERING A SPEECH
UNIT II

INFORMATION SHEET

I. Terms and definitions

  A. Paraphrase- A process of taking a quotation and breaking it down into your own words.

  B. FFA Public Speaking Contest- A contest held on the local, county, district, state, regional, and national levels where a student can demonstrate his ability in developing skills in public speaking

  C. An outline- The logical organization of ideas which forms the framework of any story, essay, or other form of literature

  D. Gestures- The use of motions of arms or the body as a means of expressing or emphasizing an idea; an integral part of speech

II. General intents of a speech

  A. To inform

  B. To induce belief

  C. To move to action

  D. To inspire

  E. To entertain

III. Developing ideas concerning speech

  A. Start with what you know

  B. Research available references

  C. Record speech material

IV. "Must do" factors for beginning speakers

  A. Write it down

  B. Label it

  C. File it away

V. Factors for recording material

  A. Identify reference source

  B. Record passage accurately

  C. Record material as a single and complete unit

VI. Rules for using quotations
  - A. Do not use several quotations in speech
  - B. Audience wants your opinion, not some unknown author's
  - C. When using quotations, use in complete text

VII. Rules for using statistics
  - A. Source of information
  - B. Date of information
  - C. Representative value

VIII. Frequent error of beginning speaker - selecting speech topics that are to broad

IX. Factors that facilitate speech development
  - A. Make your speech clear
    1. Is it clear to yourself
    2. Phrase it clearly for your audience
    3. If idea is new to audience, clarify it further by definition

  - B. Make your idea arresting
    1. Idea should be striking, different, and unusual
    2. Idea should be personal
    3. Idea should be concrete

  - C. Make your idea significant
  - D. Make your idea familiar - getting acquainted with audience
  - E. Make your idea attractive - provide your audience with an opportunity to hear what you are saying
  - F. Make your idea inevitable - speak as though your idea has got to happen
  - G. Make your idea appealing

X. Types of outlining (Transparencies 1 and 2)
  - A. Sentence - a clearer and more complete form of outline because it gives a more detailed statement
  - B. Topical outline - meaning carrying words of what might have been a complete sentence

XI. Reasons for outlining speech

   A. Reveals strength and weakness

   B. Aids in organization and development of ideas

   C. Reveals the proportion of the speech

   D. Invaluable time saver

XII. Principal parts of outline (Transparency 3)

   A. Introduction

   B. Body - the main idea of the speech; should be developed first when preparing a speech

   C. Conclusion

XIII. Rules to follow when developing main ideas

   A. Should be limited in numbers

   B. Should stand out clearly and emphatically

   C. Should be adequate to support the theme

   D. Should be arranged in the order most effective for your audience

XIV. Introduction of speech- an attractive and motivating means of introducing the subject on which you are going to speak

(NOTE: In other words, this is a process of telling the audience what you are going to say.)

XV. Conclusion- bringing together the various threads of the speech in one final effort to complete the speaker's purpose (Tranparency 4)

(NOTE: In other words, tell the audience what you have talked about.)

   A. Purposes

      1. To give a feeling of finality to the talk

      2. To clinch arguments

      3. To inspire action or respect for ideas

   B. Suggested methods

      1. Repeat theme or main idea given earlier

      2. Use appropriate story or illustration

      3. Give a quotation

      4. Suggest future prospects

      5. Review points made

C. STOP WHEN YOUR'RE FINISHED

XVI. Ways of making a good first impression
  A. Step up to lecturn briskly and confidently
  B. Stand behind lectern in a comfortable but erect position
  C. Be clearly heard with pleasant volume
  D. Let all important actions, objects, and aids be clearly seen
  E. Gain and hold audience attention
  F. Recognize that some fear is normal and don't let it upset you

XVII. Developing and adding meaning to delivery
  A. Eye contact
  B. Gestures
    1. Hand
    2. Facial
  C. Posture
  D. Movement
  E. Voice control

XVIII. Reasons for using gestures
  A. Signify specific thought
  B. Imply attitudes or moods
  C. Express thoughts and feelings

XIX. Ways of developing proper delivery
  A. Stand in front of mirror
  B. Use tape recorder
  C. Present speech to someone

XX. FFA Public Speaking Contest Divisions
  1. Freshman: 2 to 3
  2. Sophomore: 4 to 6
  3. Junior: 6 to 8
  4. Senior: 6 to 8
  5. From Senior Divison at District level 1/3 of the contestants, but not more than 5 from each district go on to the State Public Speaking Contest.

(NOTE: Suggested recommendations from State on the District Speech Contests. The districts have the right to change rules at the District level.)

6. Student may return to the State Public Speaking Contest, if he or she has not placed in the top four at State competition.

JUDGE'S SCORE SHEET
STATE PUBLIC SPEAKING CONTEST - FUTURE FARMERS OF AMERICA

PART I. FOR SCORING CONTENT AND COMPOSITION

Items To Be Scored	Points Allowed	Points Awarded Contestant												
		1	2	3	4	5	6	7	8	9	10	11	12	13
Content of Manuscript	200													
Composition of Manuscript	100													
Score on Written Production	300													

PART II. FOR SCORING DELIVERY OF THE PRODUCTION

Items To Be Scored	Points Allowed	Points Awarded Contestant												
		1	2	3	4	5	6	7	8	9	10	11	12	13
Voice	100													
Stage Presence	100													
Power of Expression	200													
Response to Questions	200													
General Effect	100													
Score on Delivery	700													

PART III. FOR COMPUTING THE RESULTS OF THE CONTEST

Items To Be Scored	Points Allowed	Points Awarded Contestant												
		1	2	3	4	5	6	7	8	9	10	11	12	13
Score on Written Production	300													
Score on Delivery	700													
TOTALS	1000													
*Less Overtime Deductions, for each minute or major fraction thereof	20													
*Less Undertime Deductions, for each minute or major fraction thereof	20													
GRAND TOTALS														
Numerical or Final Placing of Contestants														

*From the Timekeeper's record.

STATE FFA SPEECH ENTRY BLANK
(Must be postmarked no later than 1st Friday in May)

Mail Two Entry Blanks and Three Manuscripts to:

Richard R. Welton
Adult & Occupational Ed.
103 Holton Hall
Kansas State University
Manhattan, Kansas 66506

PLEASE PRINT NAME

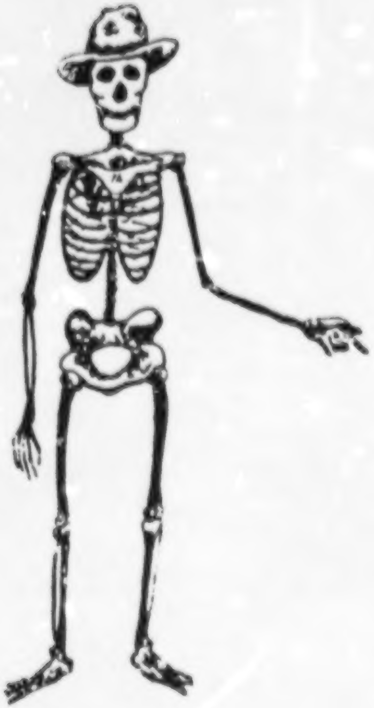
The ______________________Chapter of the Kansas Association of FFA presents ______________________as its entry in the 19__ Kansas FFA Speech Contest. Our entry is eligible under the District, State and National rules governing the contest. Our entry placed 1st 2nd 3rd 4th 5th (please circle the correct placing) in the District Contest. The subject of his/her presentation is:____
____
____

Three copies of the manuscript with bibliography are herewith enclosed. Please check ( ). Please do no sign name of school or contestant on the manuscript copies.

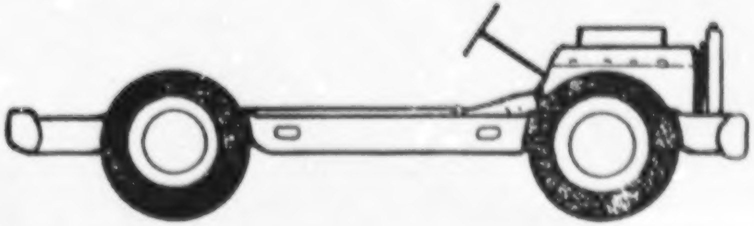
_________________________ Advisor, local chapter	_________________________ President, local chapter
_________________________ Principal, high school	_________________________ Secretary, local chapter

What is an Outline ?

A SKELETON



OR A FRAME



An Outline Forms The Framework Of A Story, Essay, Or Speech.

What Should an Outline Look Like?

I. INTRODUCTION
    A. Relationship establisher
    B. Interest gainer

II. MAIN IDEA
    A. Revelation of central thought
    B. Reason for giving this talk

III. BODY
    A. First main point
        1. Subhead-Development of point
            a. Supporting idea
            b. Further support

        2. ______________

    B. Second main point
        1. ______________
            a. ____________

            b. ____________

IV. CONCLUSION
    A. Summary or restatement
    B. Final punch line

Principal Parts of an Outline

I. INTRODUCTION : This arouses interest in you and indicates your appreciation of the audience.

II. MAIN IDEA : This lets the audience know what they are to hear about and prepares them for good listening.

III. BODY : This develops the main idea.

IV. CONCLUSION : This summarizes reviews, urges action, or gains respect for ideas expressed.

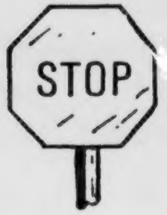
Conclusion

PURPOSES OF A CONCLUSION:

A. To Give A Feeling of Finality to Talk

B. To Clinch Arguments

C. To Inspire Action or Respect for Ideas



WHEN FINISHED

DEVELOPING AND DELIVERING A SPEECH
UNIT II

ASSIGNMENT SHEET #1- READ A SPEECH

Read the speech below and when completed with the reading, identify the introduction, body, and conclusion. This may be accomplished by writing a short discussion of how well you believe the three parts were written. When completed return to instructor for his evaluation.

A THING CALLED LEADERSHIP
by Speaking Winner--First Place National FFA Convention
Kevin Hall

I'd like to relate to you a story of a young boy, who, when entering high school, had a burning desire to participate in school athletics. He was not the same as you and me, however, for an early childhood accident left him without the use of his arms. They hung limp at his sides, permanently crippled. He couldn't play baseball, football, or basketball. Wrestling and soccer were not for him. But there was one sport he could participate in--track.

In his sophomore, junior, and senior years he practiced hard after school with the track squad, but he never ran in a race. He wasn't good enough. Finally, at the last meet of the year, one of his teammates took ill suddenly, and was unable to run. The boy of our story went to the coach and asked to be allowed to run in his teammate's place. Rather than lose the race by default, the coach granted permission, and as the runners took their positions in the blocks, a strange hush fell over the crowd. The gun went off, and as the runners shot up out of the blocks and down the track, our boy was last. He was last going around the first turn, and last going down the far side with his arms dangling pitifully at his sides while the other sprinters constantly enlarged the lead. As this boy started around the last turn he lost his balance, tripped and fell. He got up without the use of his arms and again started to run. As he approached the finish line, the audience stood and cheered, many with tears in their eyes.

As he crossed the finish line, not only his teammates, but also his competitors greeted him and hoisted him upon their shoulders and paid tribute to him. This boy had drive, he had ambition, he had courage, he had a goal. And it is these same four qualities that are characteristic of a successful FFA member and of a leader.

But what is this thing called leadership? Leadership has almost as many definitions as there are people in the world. As defined by Webster's New World Dictionary, leadership is the "ability to lead." As outlined in the inspirational book, Forward FFA, leadership in an individual is that combination of qualities and attributes that radiates confidence, inpires others, and causes others to follow him.

Some people accept the philosophy that leaders are born, not made. Others believe that leaders are made, not born. I believe that no man is born a leader, but that every man is born with the potential of leadership. Not every man is capable of becoming an outstanding leader, but every man has a degree of leadership ability that should be developed and put to work.

Picture, if you would, a set of concentric circles. In the center of these circles we place a dot. The dot represents individuals, and the circles represent the degree or actual limits of leadership ability.

Those with lesser ability lie within the first circle, those with more ability come within the second circle, and so on. It's our responsibility to push toward our potential to reach for our ultimate capability--this should be our goal.

We may never reach the outer circle--few, if any, will. But it is there for us to strive toward each day, week, month, year and for our lifetime. Ou world, our environment, and it problems are changing constantly and so will our potential.

Some worthy advice to young leaders and FFA members who are striving for this lifetime goal can be found in the words of Calvin Coolidge, who said:

> "Nothing can take the place of persistence,
> Talent will not, nothing is more common than unsuccessful men with talent,
> Education will not, the world is full of educated derelicts,
> Genius will not, unrewarded genius is almost a proverb.
> Persistence and perserverance alone are omnipotent.
> The slogan 'Press On' has solved and always will solve the problems of the human race."

W.H. Danforth, a great leader, wrote in his book I Dare You, "I dare you to be yourself, I dare you to do your best, I dare you to do better tomorrow than you have done today."

Today's youth are tomorrow's leaders--and today's FFA members are not only going to replace those down on the farm and in other agricultural positions, but many are destined to be leaders as well. At the rate our world is changing and with the growing complexity of our problems, tomorrow's leaders will have to be more efficient, better educated, and better citizens. They will have to be more knowledgeable about our environment, more aware of our country's problems, more concerned with the world, but most of all, tomorrow's leaders will have to be squares. Squares, you ask? Because you connote square to be a degrading term or insult. But doesn't it all depend on your definition of the word square? Back in Mark Twain's day, square was one of the finest words in the English language. You gave a man a square deal if you were honest. You gave him a square meal if he was hungry. You stood foursquare for your rights, and square against all unjust oppression. And if you were out of debt you were square with the world, and then you could look your fellowman square in the eye. But this word square has been badly bent and mis-shapen, and today everyone knows what a square is:

A square is someone who volunteers when he doesn't have to, someone who starts a job and completes it to the best of his ability. Someone who has the courage to step out and take command, someone who helps his neighbor and cooperates with his fellowman. A square not only preaches the Golden Rule but practices it. This is the kind of person I picture as a leader.

So the next time someone calls you square for going to church on Sunday, for saluting your Flag, for helping your neighbor, for having the drive, the ambition, the courage to overcome any obstacles on the way to your goal, be proud you are given that distinction, for tomorrow the world will call upon the squares to solve the problems and assume the positions of leadership.

(NOTE: Taken from the 1970 Proceedings of the 43rd National Convention of the Future Farmers of America.)

DEVELOPING AND DELIVERING A SPEECH
UNITE II

ASSIGNMENT SHEET #2 - SELECT SPEECH TOPIC

Study closely the different divisions of the FFA Public Speaking Contest. After you have finished, select a topic on which you would like to speak. Using the identified references, conduct as much research as possible on the topic. When completed visit with the instructor about additional information. The research should be recorded below.

DEVELOPING AND DELIVERING A SPEECH
UNIT II

ASSIGNMENT SHEET #3 - WRITE SENTENCE OUTLINE ON SELECTED TOPIC

At this point, you should begin to structure your speech in order to develop meaning and clarification. By using the information you have collected, write a sentence outline. When completed have the instructor evaluate and discuss means of improvement.

DEVELOPING AND DELIVERING A SPEECH
UNIT II

ASSIGNMENT SHEET #4 - WRITE AND DELIVER A SPEECH

Using the sentence outline written previously, write a three to eight minute speech. When finished with the writing, have the instructor evaluate. Study the manuscript and be able to present the context orally. The space provided may be used for writing the speech.

DEVELOPING AND DELIVERING A SPEECH
UNIT II

TEST

1. Match the terms on the right to the correct definition.

_____a. A contest held on the local, county, district, state, regional, and national levels where a student can demonstrate his ability in developing skill in public speaking

_____b. The logical organization of ideas which forms the framework of any story, essay, or other form of literature.

_____c. The use of motions of arms or the body as a means of expressing or emphasizing an idea; an integral part of speech

_____d. A process of taking a quotation and breaking it down into your own words

1. Gestures
2. Paraphrase
3. An outline
4. FFA Public Contest

2. Name the five general intents of a speech.

a.

b.

c.

d.

e.

3. Name the three steps in developing ideas concerning a speech.

a.

b.

c.

4. Name the three "must do" factors for beginning speakers when preparing a speech.

a.

b.

c.

5. Name the three factors to remember when recording material for a speech.

a.

b.

c.

6. Discuss in a short paragraph the procedures for using quotations in a speech.

7. Name three important factors to remember when using statistics in a speech.

   a.

   b.

   c.

8. Select the statement below which represents the most frequent error used by beginning speakers. Place an "X" in the blank.

   _____a. Speech topic not appropriate for speaker

   _____b. Speech topic not appropriate for audience

   _____c. Speech topic too broad

   _____d. Introduction does not fit the body of speech

9. Name three factors that facilitate speech development.

   a.

   b.

   c.

10. Which of the following statements identifies a topical outline? Place and "X" in the blank.

    _____a. A clearer and more complete form of outline; it gives a more detailed statement

    _____b. Meaning carrying words of what might have been a complete sentence

11. Name four reasons for outlining a speech.

    a.

    b.

    c.

    d.

12. Name the three principal parts of an outline and arrange them in order of development. This arrangement may be achieved by placing a number beside each part.

a. ____________ Arrangement _____

b. ____________ Arrangement _____

c. ____________ Arrangement _____

13. Name four rules to follow when developing the main ideas of a speech.

a.

b.

c.

d.

14. Discuss in a short paragraph how the introduction is used in a speech.

15. Discuss in a short paragraph how the conclusion should blend in with the speech.

16. Name three ways of making a good first impression when giving a speech.

a.

b.

c.

17. Name five ways of developing and adding meaning to you delivery.

a.

b.

c.

d.

e.

18. Name three reasons for using gestures in public speaking.

a.

b.

c.

19. Name three ways of developing the proper delivery.

    a.

    b.

    c.

20. Demonstrate the ability to:

    a. Read a speech and identify the introduction, body, and conclusion.

    b. Listen to a major speech, sermon, or talk and write a sentence outline of the speech.

    c. Select a speech topic, conduct research on the subject, and write the information down.

    d. Write a sentence outline of the speech from the information collected.

    e. Write and deliver a three to eight minute speech.

DEVELOPING AND DELIVERING A SPEECH
UNIT II

ANSWERS TO TEST

1. __4__ a.
   __3__ b.
   __1__ c.
   __2__ d.

2. a. To inform
   b. To induce belief
   c. To move to action
   d. To inspire
   e. To entertain

3. a. Start with what you know
   b. Research available references
   c. Record speech material

4. a. Write it down
   b. Label it
   c. File it away

5. a. Identify reference source
   b. Record passage accurately
   c. Record material as a single and complete unit

6. To the satisfaction of the instruction

7. a. Source of information
   b. Date of information
   c. Representative value

8. c

9. Any of the following:
   a. Make your speech clear
   b. Make your idea arresting
   c. Make your idea significant
   d. Make your idea familiar
   e. Make your idea attractive
   f. Make your idea inevitable
   g. Make your idea appealing

10. b

11. a. Reveals strength and weakness
    b. Aids in organization and development of ideas
    c. Reveals the proportion of the speech
    d. Invaluable time-saver

12. a. Introduction - 2nd
    b. Body - 1st
    c. Conclusion - 3rd

13. a. Should be limited in numbers
    b. Should stand out clearly and emphatically
    c. Should be adequate to support the theme
    d. Should be arranged in the order most effective for your aduience

14. The introduction as used in a speech is to make the speech attractive and motivating; it is a means of introducing the subject on which you are going to speak.

15. The conclusion is bringing together the various threads of the speech in one final effort to complete the speaker's purpose.

16. Any three of the following:
    a. Step up to the lectern briskly and confidently
    b. Stand behind lectern in a comfortable but erect position
    c. Be clearly heard with plesant volume
    d. Let all important actions, objects, and aids be clearly seen
    e. Gain and hold audience attention
    f. Recognize that some fear is normal and don't let it upset you

17. a. Eye contact
    b. Gestures
    c. Posture
    d. Movement
    e. Voice control

18. a. Signify specific though
    b. Imply attitudes or moods
    c. Express thoughts and feelings

19. a. Stand in front of mirror
    b. Use tape recorder
    c. Present speech to someone

20. Performance skills will be evaluated by the instructor.

BECOMING A GOOD LEADER

TERMINAL OBJECTIVES

After completion of this unit, the student should be able to name characteristics of a good leader. The student should be able to develop himself or herself into a good leader and demonstrate his or her ability to lead others. The student should take a Personality Self-Rating Scale to determine how he/she rates as a leader. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on a post test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Define leadership.
2. Select five characteristics of a good leader.
3. Discuss in a short paragraph why he wants to become a leader.
4. Name four steps he must take in order to become a good leader.
5. Name five values of having a leadership ability.
6. Identify himself or herself as a leader by taking the Personality Self-Rating Scale.
7. Identify some leaders within his/her community and list three factors that identify each as a leader.

BECOMING A GOOD LEADER

SUGGESTED ACTIVITIES

I. Instructor:

A. Provide students with objectives sheet

B. Provide students with information sheet

C. Discuss terminal and specific objectives

D. Discuss information and assignment sheets

E. Help evaluate the student according to the Personality Self-Rating Scale

F. Give test

II. Student:

A. Read Objectives

B. Study information sheets

C. Demonstrate the ability to accomplish the procedures in the assignment sheets

D. Take test

INSTRUCTIONAL MATERIALS

I. Included in this unit:

A. Objective sheet

B. Information sheet

C. Assignment sheets

#1 - Personality Self-Rating Scale
#2 - Identifying Leaders Within Your Community

D. Test

E. Answers to test

II. References:

A. Official Manual, Future Farmers of America, Alexandria, Virginia, 1969.

B. Leadership Training and Parliamentary Procedure for FFA, Jarrell D. Gray, and J.R. Jackson, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1958.

C. Animal Science, Missouri State Department of Education, Agricultural Education Section, University of Missouri, Columbia, Missouri.

D. Chapter Guide to FFA Activities.

BECOMING A GOOD LEADER

INFORMATION SHEET

I. Leadership - The combination of qualities which inspires confidence, draws others toward the leader, and causes them to follow.

II. Characteristics of a good leader

- A. Preparedness - Know leadership takes work as well as practice
- B. Group mindedness - Regard yourself as a part of the group. Say "we" instead of "I"; don't try to run the crowd. Instead, be guided by the crowd's wishes
- C. Consideration for others - Be understanding and friendly
- D. Poise - Don't let irritations bother you
- E. Humility - Be confident, but not cocky; don't be afraid to reveal you don't know everything
- F. Hard work - Don't ask anyone to do something that you would not be willing to do yourself
- G. Responsibility - Live up to your word and duties
- H. Cooperativeness - Know how to work with others and enjoy working with them
- I. Happiness - Enjoy life: The simple things as well as the big
- J. Imagination - Help the persons in your group to learn and grow through the activities
- K. Preciseness - Be able to express yourself effectively
- L. Pride - Take pride in what you do; take pride in being a leader, but earn it
- M. Neatness - Always be neat in dress and personal apprearance
- N. Courtesy - The words "please" and "thank you" pay dividends; use them often
- O. Understanding - Know members' opinions and be ready to meet changing situations
- P. Ambition - Set goals and make them high, but be sure to reach them
- Q. Openmindedness - Take advice, but do your own thinking
- R. Curiosity - Analyze all the facts before you draw conclusions
- S. Energy - Do your best at all times; plan to make the most effective use of your time

III. Reasons to become a good leader

  A. Leadership needed in all fields
  B. Challenge to learn
  C. Creates respect for others
  D. Aids in maturity

IV. Steps in becoming a good leader

  A. Leaders are made, not born
  B. Study qualities of a good leader
  C. Evaluate weak and strong points of yourself
  D. Become a good follower
  E. Develop a plan for training yourself as a leader

V. Values of having leadership ability

  A. Education
  B. Respect
  C. Advancement in an occupation
  D. Financial betterment
  E. Pride
  F. Security

BECOMING A GOOD LEADER

ASSIGNMENT SHEET #1 - PERSONALITY SELF-RATING SCALE

Circle the appropriate number following each trait. Four is outstanding, three is above average, two is average, one is poor. Total your score below.

1. Do I maintain a well groomed appearance? 1 2 3 4
2. Do I have a pleasing voice? 1 2 3 4
3. Is my posture alert and poised? 1 2 3 4
4. Is my disposition cheerful? 1 2 3 4
5. Do I make friends easily? 1 2 3 4
6. Do I exert a positive leadership? 1 2 3 4
7. Am I generally thoughtful of the feelings of others? 1 2 3 4
8. Is my enthusiasm sincere and contagious? 1 2 3 4
9. Do I persevere until I achieve success? 1 2 3 4
10. Am I sincere in my interest in other people? 1 2 3 4
11. Am I ambitious to get ahead? 1 2 3 4
12. Do I get along well with others? 1 2 3 4
13. Do I react constructively to criticism? 1 2 3 4
14. Do I remember names and faces? 1 2 3 4
15. Am I punctual on all occasions? 1 2 3 4
16. Do I have and evidence a spirit of cooperation? 1 2 3 4
17. Am I free from prejudice? 1 2 3 4
18. Do I know how people react in most situations? 1 2 3 4
19. Am I generally a good listener? 1 2 3 4
20. Do I refuse to allow what others say to hurt me? 1 2 3 4
21. Can I criticize without giving offense? 1 2 3 4
22. Do I usually like people for what they are, or do I wait to see if they like me? 1 2 3 4
23. Do I enjoy being part of a group? 1 2 3 4
24. Am I reliable? 1 2 3 4
25. Can I adapt myself to all situations? 1 2 3 4
26. Am I easily discouraged? 1 2 3 4
27. Do I apply myself to the problems of each day? 1 2 3 4

28. Can I make a decision quickly and accurately? 1 2 3 4

29. Am I loyal to my superiors and associates? 1 2 3 4

30. Do I try to get the other fellow's point of view? 1 2 3 4

31. Am I neat and clean in my work as well as my personal appearance? 1 2 3 4

32. Do I know where I make my mistakes, and do I admit them? 1 2 3 4

33. Am I looking for opportunities to serve others better? 1 2 3 4

34. Am I following a systematic plan for improvement and advancement? 1 2 3 4

35. Can I accept honors and advancements and yet keep my feet on the ground? 1 2 3 4

36. Am I playing the game of life honestly and fairly with myself, my fellow members, and others with whom I work? 1 2 3 4

BECOMING A GOOD LEADER

ASSIGNMENT SHEET #2 - IDENTIFYING LEADERS WITHIN YOUR COMMUNITY

Identify three individuals in your local community which appear to you as good leaders. After you have identified the leaders, list three factors that identify them as such.

NAME	LEADERSHIP QUALITIES
1. ____________________	a. ____________________
	b. ____________________
	c. ____________________
2. ____________________	a. ____________________
	b. ____________________
	c. ____________________
3. ____________________	a. ____________________
	b. ____________________
	c. ____________________

BECOMING A GOOD LEADER

EVALUATION OF ASSIGNMENT SHEET #1

To Evaluate your scores follow the following scale: If your score totaled over 100, your personality rating is definitely superior. If you have been honest with yourself, you are among the people who are most likely to succeed. Scores of 90-100 is above average. Scores of 75-90 is average. If your score is below 75 this shows plenty of room for improvement.

BECOMING A GOOD LEADER

TEST

1. Define leadership:

2. Select five characteristics of a good leader. Place an "X" by the correct characteristics.

   _____a. Be well prepared
   _____b. Be responsible
   _____c. Have low goals
   _____d. Take advice
   _____e. Have no pride
   _____f. Be neat
   _____g. Get the facts

3. Why do you want to become a good leader?

4. What are four steps to follow in becoming a good leader?

   a.
   b.
   c.
   d.

5. Name five values of having leadership ability.

   a.
   b.
   c.
   d.
   e.

BECOMING A GOOD LEADER

ANSWERS TO TEST

1. The combination of qualities which inspires confidence, draws others toward the leader, and causes them to follow.

2. __X__ a.
   __X__ b.
   _____ c.
   __X__ d.
   _____ e.
   __X__ f.
   __X__ g.

3. Discussion should include the following:
   - a. Leadership needed in all fields
   - b. Challenge to learn
   - c. Creates respect for others
   - d. Aids in maturity
   - e. Other items that instructor felt was necessary

4. Any four of the following:
   - a. Leaders are made, not born
   - b. Study qualities of a good leader
   - c. Evaluate weak and strong points of yourself
   - d. Become a good follower
   - e. Develop a plan for training yourself as a leader

5. Any five of the following:
   - a. Education
   - b. Respect
   - c. Advancement in an occupation
   - d. Financial betterment
   - e. Pride
   - f. Security